

COAL AGE

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The Power of Encouragement

WOULD you fight for your Big Boss?—Sure you would. Do you brag about the smart things he does?—Sure you do.

Do you repeat to your wife and your kids what he tells you about his wife and his kids?—Of course you do.

And do you go off and smile to yourself every time he gives you a little pat on the back just to let you know that he appreciates the way you are running things?—Well, I should say yes.

Truth of the matter is (even if you haven't thought about it in quite that light) he's quite a hero in your eyes.

Isn't it strange then that you can't understand why it is that some of the men under you seem to lack enthusiasm.

If you didn't like your "boss" you'd nose about for a new job tomorrow; but the men under you can't throw up their places as easily as all that. They are living from hand to mouth, a good many of them, and they don't have much time to speculate about their likes and dislikes; nevertheless they are

human like yourself, and their personal feelings drive them just as yours drive you.

If you, as boss, can't inspire your men to give you the best that is in them, it's a sure bet that your company, to a certain degree, is suffering from industrial paralysis, and the chances are you'll never discover the fact until it is too late.

Just put yourself in their shoes for a few minutes every day and try to picture your big boss dropped down a notch into your place.

It isn't necessary to do your thinking out loud while you're trying this—it wouldn't do, in fact—but you can feel reasonably certain that unless you are able to look back up the line and see why you really are a hero to the men under you, you don't belong where you are, and what's more you will not be there long.

On the other hand if you can succeed better in the business of inspiring men (the hero's business) than your big boss, it won't be long before you will be a big boss yourself and in time you may hope to be even a bigger boss.

A Visit to Coal Mines in Germany

BY SAMUEL DEAN*

SYNOPSIS—American coal operators might profit by studying the plans employed in developing the German coal industry. Their system of selling coal is the greatest on earth today. The mines are models of completeness and durability. Government lends aid at every turn. Wages are less than in America or Great Britain, and production per individual is less. Surroundings, however, are more pleasant.

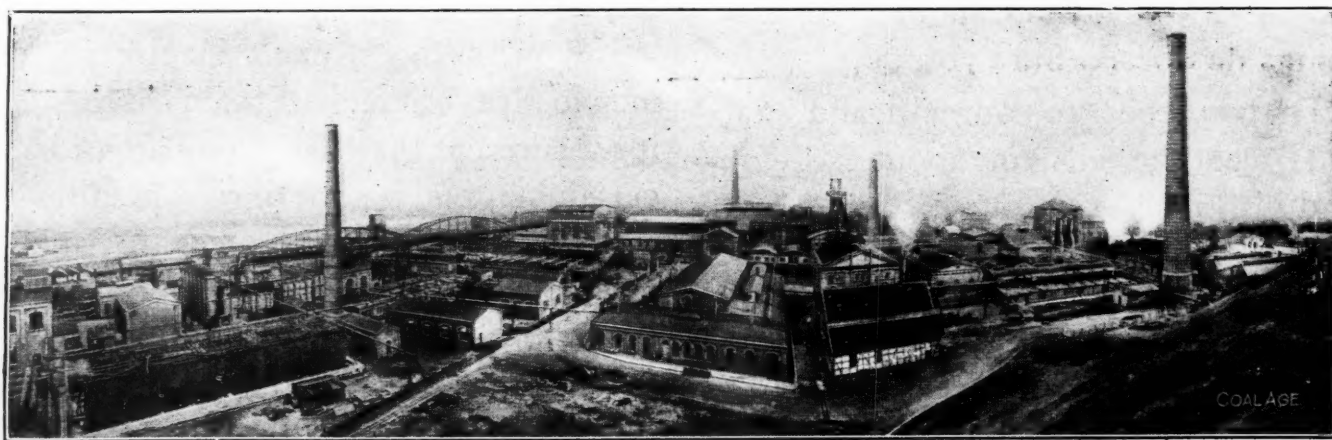
When we are continually told about the wonderful things to be seen in a certain country or at a certain mine we are often disappointed when we go there to see for ourselves. But in spite of all the marvelous things we have heard about Germany in recent years it is a feeling of wonder and not disappointment that creeps over the visitor as he passes into the coalfields of Westphalia on his way from Rotterdam. As soon as the giant steel headframes and magnificent colliery buildings come into view

buildings with their terra cotta tile roofs glistening in the sun, appeared to have been built only a few years. He turned to me with a sigh: "It was not so 40 years ago," he said; "France paid for all this." Whether that is true or not I do not know, but France, it will be remembered, had to hand over \$1,000,000,000 after the Franco-Prussian war.

That looks like a tremendous sum of money and yet the collieries in the north of France are little behind those of Westphalia. There is a lighter touch about the architecture of the buildings at the mines in France, more sheet steel and fewer thick brick walls. Both are pretty to look at, but the buildings in Germany would doubtless stand a siege longer.

A WONDERFUL ARRANGEMENT

And what can I say about the interior of these buildings, to enable me to convey anything like an adequate



TYPICAL GERMAN COAL-MINING PLANT WITH BYPRODUCT OVENS

between Wesel and Oberhausen, a scene opens up which holds the interest of the mining man every minute he is in that great industrial area which has its center at Essen.

When in the colliery districts, it is not a case of having to travel miles and miles to see a modern mining plant; all the plants are modern. Germany may be called an "old country," but Westphalia is certainly the newest looking country I have ever seen. One views with astonishment the spick-and-span appearance of everything. Apparently there is not a telegraph pole out of the perpendicular. No weeds growing, no wooden shacks in sight. In fact I do not remember seeing a wooden building, and every inch of available ground was under cultivation.

SAYS THE FRENCH PAID FOR IT

As I left Dusseldorf and passed through a splendid agricultural country,¹ through Cologne and on to Liège in Belgium, I had a Frenchman for a companion, and I asked him if he could tell me how it was that everything appeared to be so new. Even the farmhouses, and farm

*Mine inspector, Victor-American Fuel Co., Delagua, Colo.

¹The German farmer has mastered the science of plant nutrition; the yield per acre of every staple crop is greater in Germany than in any other part of the world.

idea of their magnificence? The polished machinery, the beautiful floors and tiled walls must be seen to be appreciated. In the power houses, the switchboards resemble giant pieces of drawing-room furniture. The entrance hall for the miners at the Hermann colliery near Dortmund would be quite suitable as a banqueting chamber. One would think the designer had copied it from a castle on the Rhine. Around the interior are the offices of the different officials, and the miners enter the hall and pass to the window of the official they wish to see between shifts.

Inside the entrance gates of the colliery you can step over to a small bar, where for a trifling coin an attendant allows you to select from his assortment of bottles of soft drinks, mineral waters and milk. Up in the screens I saw and sampled the contents of a similar bar. A very handy arrangement this—a thirsty official can get a drink without having to leave the works; it is also very convenient for the workmen. By the way, it might be mentioned that it is difficult to get a drink of plain water on the continent of Europe. Traveling Americans have introduced ice water, but the waiter always gives you the impression that he is disappointed when he places a pitcher on the table.

I asked a German mining engineer why they erected such elaborate buildings about the mines, and he said that to a certain extent the laws demanded them, and that the owners felt that the workman took more interest in his work when everything was pleasing to the eye. I am sorry that I cannot show more pictures of the collieries in Germany. Photographs were being prepared for me, and were to have been sent on, but they have not arrived and the reader will probably know the reason why.

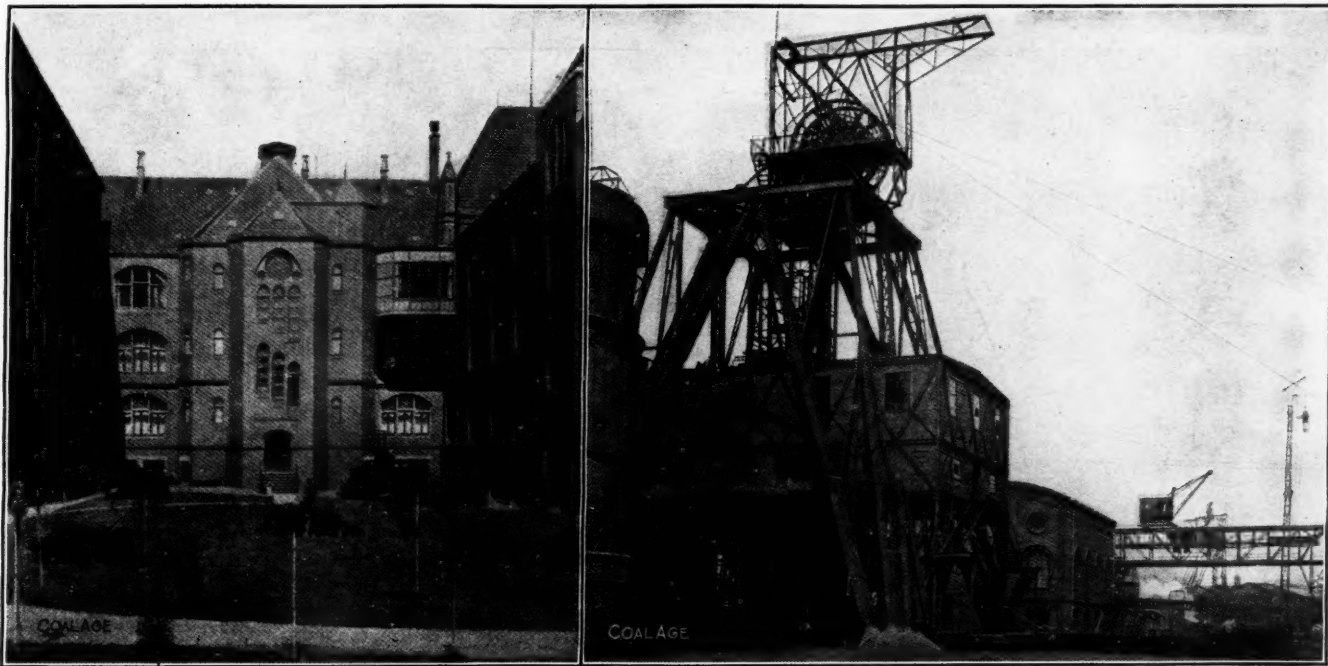
EXTRACTING THE BYPRODUCTS FROM COAL

I do not propose to go into what is being done in the way of extracting byproducts from coal; suffice it to say that soft seams which were considered valueless years ago are now being worked, and in addition to coke, they derive from them sulphuric acid, carbolic acid, chrysolic acid, benzol, sulphate of ammonia, tolulene and various other products. Profits of as much as \$1.25 per ton of coal from the byproducts alone are common.

GERMAN DISCIPLINE

The discipline in German works and offices is severe. There are many things which the public are forbidden to do. An observer is forced to the conclusion that many Germans do not think their great industrial success is worth the sacrifices made to obtain it. The middle course is perhaps the happiest existence. Too much discipline or too little are equally undesirable.

And yet they still have explosions in the mines in Germany, and try to palm them off as gas explosions when they travel from the face and up the shaft. On the question of dealing with the coal-dust danger, they are certainly not in front. Their explanations were amusing, and finally one of their inspectors blurted out that he did not think there was any cure for dust explosions. But hundreds will never agree with that statement. It is not difficult to make an advancing longwall mine, where tight steel cars are used, immune from dust explosions. And



OFFICE BUILDING OF THE WESTPHALIAN COAL
SYNDICATE

STEEL HEADFRAME AT A MODERN GERMAN
COLLIERY

In this branch of the industry Germany leads the world by a large margin. This is due to the superior education of the people, coupled with government assistance. For years the government of Germany has assisted the industries of the nation. Had this war not taken place, it is impossible to imagine what the country would have done. A London merchant told me that he could not understand why the Germans had rushed into the war because in his opinion they were beating the world commercially.

The bulk of their exports was shipped from Rotterdam, and a prominent official of the Westphalian Coal Syndicate repeated to me, what I had heard before, that Germany needed more seaborne; they were hemmed in too much. It is a fact, however, that the rank and file felt the oppression of militarism. The official quoted above stated to me that every summer he crossed the North Sea for his holidays, and immediately upon landing on the other side he felt like a bird let out of a cage.

in this connection it may be said that the difficulty of dealing with coal dust is far greater in America than it is in the mines on the other side of the Atlantic. In this country we have dilapidated open cars, with the coal loaded above the top, and the sides of our haulage roads are in coal.

SOME GERMAN METHODS ARE COSTLY

They maintain clean haulage roads in Germany, and use tight steel cars. They employ the old-fashioned method of sprinkling, which is costly, being over 6c. a ton in certain places. This system is considered unsatisfactory by managers, but it is the law. They use troughs filled with water, along the sides of the roadways, and I am told have tried piles of wet peat in some places. Both methods are elementary.

The mines are well inspected, each mine being visited about twice a week by a government inspector. I was told that these inspectors worked in harmony with the man-

agement. Many of the managers were formerly government inspectors.

THE RADBOD EXPLOSION

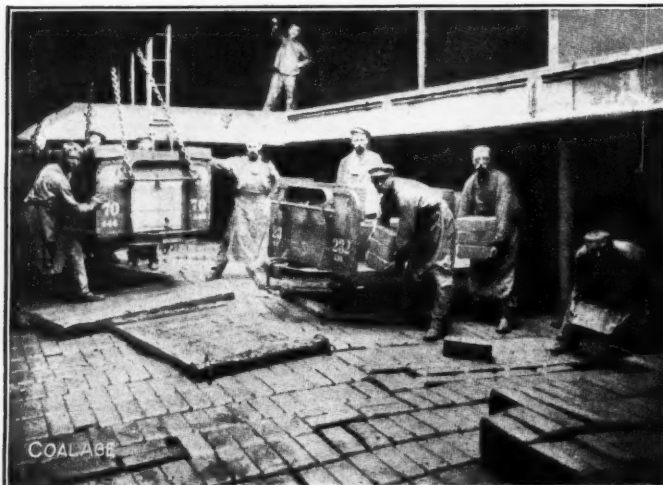
The explosion which recently occurred at Radbod colliery in Westphalia caused the death of 348 men including 6 officials. This was a new colliery and had only been in operation about two years. The shafts are about 2000 ft. deep. The seams gave off gas, but the workings being new the ventilation was exceptionally brisk. The gas given off was continuous, sudden blowers or outbursts being unknown. Benzine safety lamps were used in all parts of the workings except at the pit bottoms, where acetylene safety lamps were used. The benzine lamps were magnetically locked, and fitted with an internal frictional ignition device.

It is said that there was some coal dust present. An elaborate spraying and sprinkling system had been installed, and according to inspector Hollender, the rules relating to sprinkling had been enforced—the total quantity of water used for that purpose having exceeded 440,-

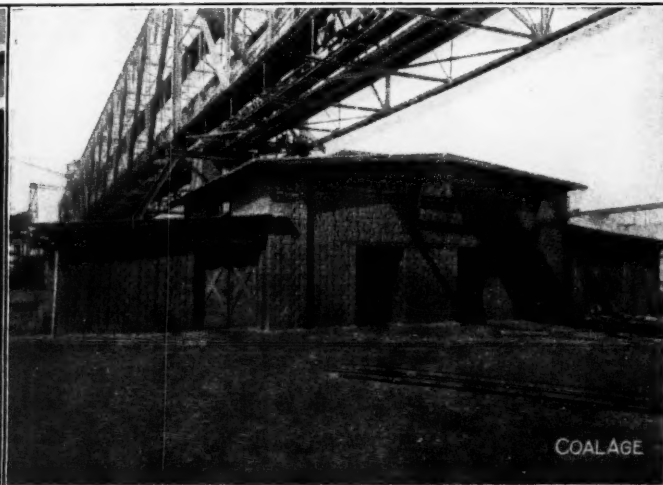
testing station in Germany. A framework is built in the roadway, fixed to roof, floor and sides. In the framework there is a swing, hung on hinges and holding light pans which are overturned on the opening of the swing. The swing is hung a little open and the shock preceding the flame of the explosion is supposed to cause the contents of the pans to be thrown into the atmosphere to extinguish the flame. Incombustible dust may be used, but the inventor, doubtless having a desire to be original, recommends a liquid which he calls hermanite; this does not evaporate, and has special extinguishing properties.

AMOUNT OF WATER NECESSARY

Experiments at the Konig colliery showed that certain coal dusts were rendered noninflammable by the addition of a quarter their volume of water. When coal dust was only sprinkled, two-thirds of its volume of water was required. For the conditions of practice, $1\frac{1}{2}$ parts of water to 1 of coal dust were considered necessary. And to combat the drying effects of the air currents 2 parts of water to 1 of coal dust might be needed. Nozzle spraying was



STORING PATENT FUEL IN A STEAMER'S HOLD



A SHOP BUILT OF PATENT-FUEL BRICKS

000 gal. per day. Special shotfirers were employed who fired their shots electrically and used permissible powders.

The explosion occurred at 4:20 a.m., a great cloud of black smoke issuing from the mouth of No. 1 shaft. Two more explosions occurred next day, and the mine exploded again twelve days later, after which the workings were flooded. Beads of coke were found marking the passage of the explosions, but no large masses or cakes of coke.

GAS VS. DUST

It is said that the cause of the explosion is unknown (another to that great list); that the effects of the flooding had put a detailed investigation out of the question, but that the explosion had visited all parts of the workings. Some of the inspectors seemed to think that a defective safety lamp caused the accident. I was told that this was a *gas explosion*, but when I inquired how a gas explosion could travel a main road against a strong fresh current of air there was some telephoning and eventually I was assured that gas started the explosion, and that *probably* coal dust carried it to the outside.

THE HERMANITE BARRIER

A curious barrier arrangement, inspired by Taffanel's experiments in France, has been tried at the Neunkirchen

not satisfactory, and in a report by an engineer named Hatzfeld, particulars were given of the successful experiments in France, where explosions were stopped by shale dust falling from overhead shelves, and collapsing box arrangements which were knocked down by the wave in front of the flame.

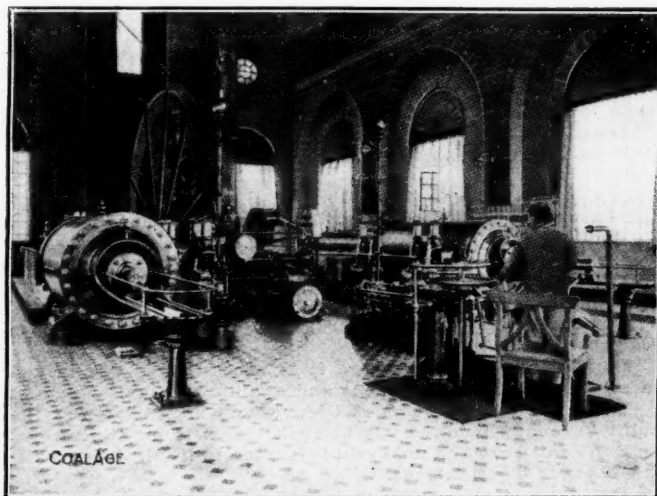
The superintendents and inspectors in Germany are well paid, but the miner is doing well when he makes \$1.75 a day; the average is about six marks, or \$1.50 per day. Company men receive \$1 to \$1.25 a shift. The output is less than one ton per man per shift for all men employed underground. The miners are well housed; in this respect they are better provided than are some of the miners in England, but their earnings are lower. They have parks in the center of the mining villages for the children—the latter being, needless to say, numerous. The rent for miners houses is 50c. per month per room. Officials are provided with free house, coal and light.

BATHING ACCOMMODATIONS

Large bath houses are provided at the pits, with private baths for officials and visitors. It is not necessary to carry overalls or pit clothes when traveling on the continent of Europe, as complete changes are provided, including boots, socks, underclothing, etc. Men are in charge of

the private bath rooms in Germany, but women are employed for that purpose in France, and when the visitor ascends the shaft he finds his bath ready with clean towels and soap, and his clothes brushed and laid out on a table. They are exceedingly obliging in this respect in France. When continental mining engineers go back after a visit to this country they cause much amusement by telling their friends about having to carry dirty pit clothes all over the States, and not being able to get a bath when they come out of the mine.

At a large mine in Germany employing say, 1000 men underground, the mine is split into districts with about 100 men to the district. There is an overman for each district for each shift. There are 3 eight-hour shifts from 6 a.m. to 2 p.m., 2 p.m. to 10 p.m., and 10 p.m. to 6 a.m. Half an hour is allowed to hoist and lower men. The first shift starts going down at 5:30 a.m. Coal is hoisted during the morning and afternoon shifts; the night shift is for repairs.



INTERIOR OF A GERMAN ENGINE HOUSE, SHOWING HOISTING MACHINERY

Austrians, Poles and Italians in large numbers were working in German mines, and there was a shortage of men.

The price of run-of-mine coal at the pit mouth, or the average price for all sizes of screened coal, was \$2.75 to \$3 per ton. Large quantities of briquettes were made and sold for \$3.50 to \$3.75 per ton at the mine. The cost of pitch, which is used as a binder, was \$10 a ton delivered at the mines.

THE WESTPHALIAN COAL SYNDICATE

The coal corporations do not employ private sales agents, the coal being sold in a manner similar to the methods employed by the orange and lemon growers of California. With regard to the Westphalian Coal Syndicate, I was told that this selling agency did not sell in an arbitrary manner or abuse its position. Its object was to avoid violent fluctuations in prices. If prices of its competitor across the North Sea jumped a dollar a ton, it raised the prices of German coal 25c. a ton, and in the event of a fall of a dollar a ton on the other side, syndicate prices went down about 25c., so that manufacturers could rely upon steady prices at all times.

The syndicate on account of its considerate methods enjoyed the confidence and full approval of the state. The

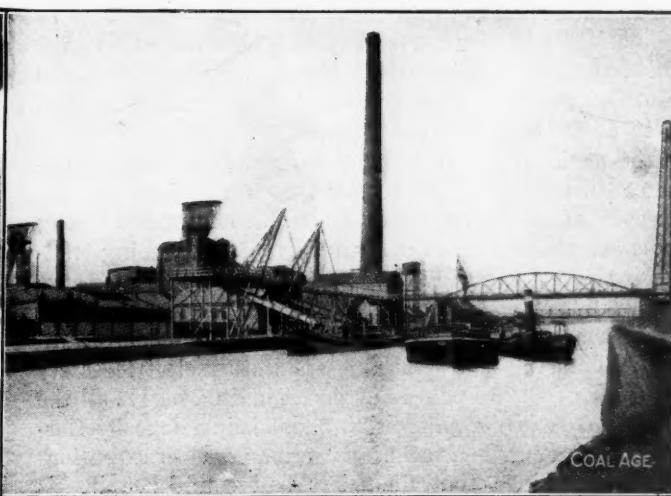
state would not wish to see it abolished. The miners of all classes, including the social-democrats, wanted to see it continued. And only a few short-sighted consumers criticized it, but the majority of consumers also wished to see it continued. In consequence of its existence the mines worked regularly, averaging about 300 days every year, the miners made steady wages, strikes were seldom heard of, and all round, the situation was highly satisfactory. The plants are magnificent, the status of the officials was high, the miners lived in pretty homes and were happy, and the owners made fair and reasonable profits.

The syndicate advertised, in different languages, in the following manner:

Annual capacity production of:

Coal	about 110 million tons
Coke	about 26 million tons
Patent fuel	about 6.5 million tons

Suppliers to the German, French, Spanish, Danish, Russian, Swiss, Italian, Dutch, Portuguese, Greek and many other railway companies; also the German, Austrian and Greek navies;



LOADING DIRECTLY FROM MINE INTO BARGES AT THE DORTMUND-EMS CANAL

also to the most important steamship companies at home and abroad.

The coal district of the Ruhr producing all kinds of coal of the purest quality; that is to say, from anthracite coal to high-flaming coal, the syndicate is in a position to supply every consumer of coal with the material most suitable for his purposes, no matter whether his plant has been intended for Cardiff, Swansea, Newcastle, Yorkshire or any other coals. The supply can be made in every desirable composition; there are also available washed coals of the most varied sizes from pea to nut and lump, which, owing to their purity and absolute regularity of quality, are in particular favor with purchasers.

Coke, very hard and of great purity, may be advantageously used for foundries and all smelting purposes, equivalent to the best Durham coke.

Patent fuel in sizes of 3, 5, 7 or 10 kilos, is in quality perfectly equal to the best Cardiff brands.

Exports to all parts of the world.

The salesmen in charge of the export department of the syndicate were experts at their business, and knew the characteristics and prices of fuels the world over. Their branch offices in different parts of the world secured the orders, and these were turned over to another department which was familiar with the qualities of the coal from all the collieries, and arranged the distribution. They were shipping coke to San Francisco around the Horn.

No nation in the world was making such a bid for foreign trade as Germany. In the last 25 years this trade

increased 300 per cent. The German empire is little more than half the size of Texas. The actual value of total exports during 1913 was: Germany, \$2,131,000,000; United States, \$2,428,000,000.

A LESSON WE MIGHT LEARN

The Germans have been ready to supply what the consumer wanted. They have not shipped unscreened mine-run into a market which has been previously supplied with clean screened coal. They have not allowed the status of the sales-agent to grow away beyond that of the superintendent of the factory or mine. Coal for export was shipped over the state-owned railroads of Germany, at a less rate than fuel for home consumption, and the rate per ton for large shipments was less than the rate for small shipments.

The German firms made their quotations in the decimal system, which is understood nearly everywhere, and they went to great pains to make the path of the purchaser easy by talking to him in his own tongue. In this respect, the English-speaking individual often fails lamentably by comparison; he usually speaks only his own language, and that often indifferently. The German method is the result of the admirable system of commercial education given at the state-aided schools.

The banks appeared to treat the manufacturer and operator liberally; he could often secure a loan on the strength of orders received. In fact, some of the strong firms complained that certain banks were becoming trading concerns. The inventor seemed to be able to secure financial backing without a great deal of trouble; note how Germany led in the production of some modern mining appliances—the breathing apparatus, electric safety lamps, the freezing process of shaft sinking, nearly all the successful freezing work in England being done by German engineers. The technical German was so exceptionally well trained that financiers had confidence in his plans and proposals.

The long-credit systems of German firms were often criticized, however, by their competitors. And it is well known in the steel trade that the German Steel Syndicate paid export bounties amounting to \$3.75 per ton. Some are of the opinion that militarism had placed such a burden on Germany that she was at the breaking point before war was declared.

(To Be Continued)

Alberta's Coal Output

The annual report of the Mines Branch of the Department of Public Works of Alberta for 1913 shows that the output of the coal mines of the province for that year was 4,306,346 tons, as compared with 3,446,349 tons in 1912, an increase of 859,997 tons, or about 25 per cent. Of the production in 1913, 2,374,401 tons were bituminous, 1,763,225 lignite and 168,720 anthracite.

The total number of men employed was 8068, of whom 5837 were employed underground. The number of tons of coal mined per man was 533, as compared with 517 in 1912, the increase being due to the greater use of coal-cutting machinery in the lignite field. There were 45 new mines opened and 72 closed during the year, the abandoned mines having in many cases only been temporarily opened for prospecting purposes and closed down

until railway connections could be made. At the close of the year there were 289 mines in operation.

The output of coke was 65,167 tons, and of briquettes 130,861 tons. There were 28 fatal accidents, of which 24 were underground and 4 above, 60 serious and 83 slight accidents. Eight of the fatal and 15 of the serious accidents occurred in connection with haulage, and only one fatality was due to the use of electricity. Much progress was made in connection with mine-rescue work, three rescue stations being in operation at which 201 persons underwent training, 51 of whom passed final examinations and were granted certificates for efficiency.



Don'ts for Miners

Don't enter your place of work without hearing from the fireboss.

Don't pass the fireboss' station, or allow your laborer to do so, until the fireboss returns and reports that it is safe to enter.

Don't enter your place without examining carefully for gas and other conditions, even though the fireboss has reported the same safe—they may have changed since his visit.

Don't fail to be careful when taking timber up in your breast for fear it might slide down and catch you or others.

Don't sit or work under a bad top; timber it or take it down immediately, always standing in a safe place to do so.

Don't allow your drill bits to be worn too small; be sure they are large enough to allow the cartridge to enter the hole freely.

Don't fail to keep detonators at all times separate and apart from other explosives until required for use.

Don't fail to keep gunpowder and other explosives in a wooden or metallic box, and a proper distance from the track.

Don't fail to examine your safety lamp and assure yourself that it is in good condition.

Don't attempt to open your safety lamp when the rules require it to be locked.

Don't carry matches where it is necessary to use locked safety lamps. It is dangerous and against the law.

Don't fail to extinguish and leave your naked lamp at the point beyond which the use of such lamps is prohibited.

Don't fail to obey the law in reference to lights when making charges of explosives.

Don't use a nail or spike to put a cap in a stick of dynamite, nor crimp the exploder by biting it with your teeth, or have a naked light near you while handling the charge.

Don't use two kinds of powder in the same hole; that is, black powder and dynamite.

Don't do tamping with an iron or steel bar; use a wooden tamping stick and tamp the hole to the mouth.

Don't shorten your fuse or squib to hasten the blast. It is prohibited by the Mine Law.

Don't use a blasting barrel instead of a fuse, inserting a cap in the barrel and exploding with a squib. This is a dangerous practice.

Don't connect your battery wires to those used by some other person. Connect your wires direct to the battery.

Don't connect your wires to the battery until ready to fire. If shot does not explode, be sure to disconnect at battery before seeking cause.

Don't fire a shot until you have given warning and received response from everyone in the vicinity.

Don't fire two holes at the same time under any condition.

Don't light fuse or squibs with matches where safety lamps are used; use a wire and always examine your place for gas or any other dangerous conditions before firing.

Don't go in a return air course or blind heading when firing a shot—the unexpected may happen.

Don't return to the face too soon after firing; take plenty of time and avoid accident. In case of misfire, go home for the day, place a warning for others in your place and notify the person in charge of your district.

Don't drill or pick out a misfire—drill a new hole.

Don't fail to examine the face thoroughly before commencing work, and after firing each blast, look for bad top or gas, and under no circumstances allow the laborer to enter before you do so and find it to be safe.

Don't fail to immediately extinguish a feeder of gas that you may ignite by a blast or otherwise; if unable to do so,

Note—From Susquehanna Coal Co.'s Book of Instructions to Employees.

notify at once the official in charge. Also examine your working place before leaving to see that no gas blowers are left burning.

Don't remove an accumulation of gas by brushing it, where it is practicable to be removed by bratticing.

Don't fail to remove any dangerous conditions at once by dressing down the face and repairing the broken brattice or blownout props.

Don't fail to keep the roof and sides of the working place in your charge properly secured by timber, or otherwise, and do not work or permit your laborer to work under loose or dangerous material, except for the purpose of securing same.

Don't fail to use props of safe and sufficient size for your manway, and don't use split props as they give a poor hand hold. Don't fail to sprag jugglers when necessary and also nail liners at both ends.

Don't remove any props until the relief props are placed, and always see that a good hitch and a large cap piece are used, and in no case remove props or timbers except by blasting or by some other safe method.

Don't fail to pay special attention to the top, and do not undermine top coal or top rock more than to the extent of one row of shots.

Don't neglect to order necessary props, etc., one day in advance. If you fail to receive same and your place becomes unsafe, you should vacate it.

Don't fail to observe all rules for the handling of explosives.

Don't fail to immediately report to the official in charge anything you may discover wrong that may lead you to suspect danger to yourself or others.

Don't be in a hurry to go home; take your time and work safe. A great many accidents are caused by hurrying through the day's work.

Don't go into abandoned workings or live workings when the miner is not present—there may be danger.

Don't attempt to drive a heading into a finished place before learning the condition of the place from the fireboss.

Don't let your manway become unsafe or hard to travel—your life may depend upon it.

Don't leave your place at quitting time without examining it and making it safe, and on pitch work always secure the top of your manway, placing tools where others cannot be injured by coming in contact with them. Remember the fireboss, as well as yourself, must visit your place the following morning.

Don't let your car stand in the face of a place on grade without blocking it securely.

Don't allow your laborer to remain at work without you.

Don't carry a drill on your shoulder when traveling near a trolley wire.

Don't ride on loaded trips when going home.

Don't ride between cars.

A Flexible Coupling

It became necessary, says C. F. Scribner, in *American Machinist* of Nov. 5, to design a flexible coupling where the amount of room for its construction was limited; high speed was required and the demands for service were intermittent. Such cases frequently occur, as in driving a generator from a motor, driving a fan for an exhaust system and many other applications.

The sketch shows the design finally adopted for the foregoing requirements and which has now served successfully for a period of two years. The coupling consists of the two gray-iron flanges, having four driving studs in each, the studs being placed on the smaller radius in the driving flange and on the larger radius in the driven flange. Connection is made by the action of the driving studs of the smaller radius against the 1-in. endless leather belt, which encircles the studs spaced at the larger radius.

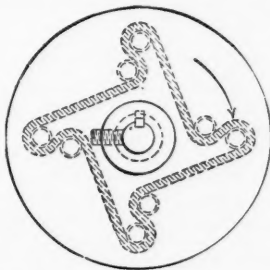


DIAGRAM OF COUPLING

To break the connection, it is only necessary to loosen a setscrew, sliding one flange endwise until the studs are released from engagement with the belt, when the belt can be slipped over the flange not in motion, where it can remain until further service is required.

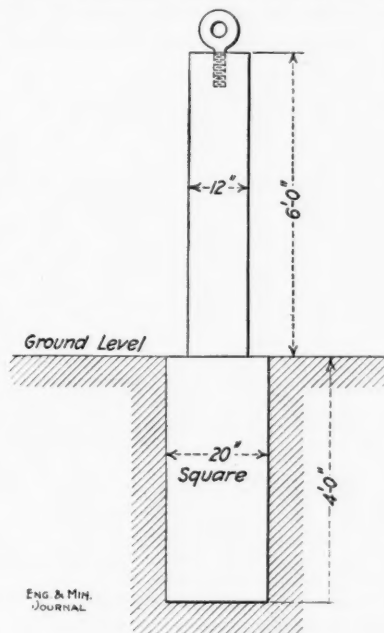
It was found that exceptional accuracy in the alignment of the two shafts was not required, as in the case where a slip-coupling was used and that there was a complete lack of vibration, and it was nearly noiseless, and easy in starting—factors which make its use desirable in many places.

Raising Guy Lines

Those who have had occasion to walk around the surface of mining properties at night have probably, once at least, stumbled across a guy line leading from a smoke-

stack or similar object. L. E. Ives discusses this subject in the Nov. 7 issue of the *Engineering & Mining Journal* as follows:

The height at which these lines generally cross a path is just about that necessary to strike one in the neck. The sketch shows how this may be overcome, at the same time providing a perfectly strong anchor. A concrete post, reinforced with two 30-lb. rails, is made with a total length of 10 ft. The upper 6-ft. section of this



GUY-ROPE SUPPORT

post is circular in cross-section and 12 in. in diameter. The remainder is square, 20 in. on a side. The square section is placed in the ground, and the round portion extends above ground. An eye-bolt is embedded in the top, and the guy line is attached to this. In this way the line at its lowest point is 6 ft. above the ground, giving ample clearance.

Increased Coal Output of China

Prior to 1909 little attention was paid to coal exports from China, says the *Daily Consular and Trade Reports*, but during 1913, owing to the activity of the Kailan and Fushun mines, the increased valuation of coal exports was placed at \$2,311,578, representing an increase of 808,670 tons.

The Kailan project is a British-Chinese enterprise, operating the Kaiping and Lanchow mines, with nearly \$10,000,000 capital and an annual output of about 1,800,000 tons. The Fushun collieries are operated by the Japanese in connection with the South Manchurian Ry., the output being roughly estimated at 8000 tons per day. Some of the coal mines in China are operated by modern machinery, while others are utilizing native methods.

The Labor Situation

SYNOPSIS—The President is not intending to protect the miners continuously who are employed in the Bache-Denman mines in Arkansas, but only the U. S. marshals when executing the law. In Butte, kidnapping union men has been punished with 5 years' imprisonment, while in Colorado this crime, though frequently committed, has gone unpunished because only nonunion men have thus far suffered. The state authorities in Colorado want the U. S. troops withdrawn.

The receiver of the Bache-Denman Coal Co. in Arkansas when ordered by the U. S. Court to resume operations imported nonunion men from Clarksville and Jintown. It was thought, of course, that as the men were employed on the order of the federal court, they would be protected by the U. S. troops brought into Arkansas to keep order.

Military Will Not Stand Guard at Mines

But to the present administration only those who obey and acknowledge the trades union are entitled to protection. So Major N. F. McClure in command of the federal troops was caused to make a proclamation that he would not act as a continual guard of the men at work but help the U. S. marshals should an emergency arise. The men working for the coal company must feel that such slackness may cause a repetition of the murder and arson which have already disgraced union labor and the state of Arkansas, and if it occurs again will dishonor the administration at Washington. There is a certainty that these marshals will be described as irresponsible gunmen of the operators and that public sympathy will be denied them. As a result the miners under their protection will take their lives in their hands.

Kidnapping Is Safe where Right Men Are Kidnapped

The reader should note how satisfactorily the rioters in Butte, Mont., have been squelched. But then, these sacrilegious men ventured to raise their hands against the Union. In Colorado far worse things have been done to nonunion men than were done in Butte by "Muckie" MacDonald to members of the American Federation of Labor. As yet no punishment has reached them while Muckie, victim of a peculiar misjudgment, has offended Mother Jones and her friends and so gets three years in the Deer Lodge Penitentiary. Joseph Bradley, vice-president of the new Union, receives five years, and Joseph Shannon, member of the executive board, is found not guilty. The crime was kidnapping miners—union miners. How shall such crimes be expiated! It will be remembered that the Ludlow affair in Colorado arose out of the forcible detention by union men of an Italian, Tutoilmando. Interference by the Colorado militia with the kidnappers of the Italian was the direct cause of that military action.

Ammons Wants U. S. Troops Removed

The governor of Colorado, E. M. Ammons, is in accord with his successor, G. A. Carlson, and believes that the time has come for the state to resume her sovereignty and call for the removal of the troops. The Burris Legislative Investigating Committee has so advised, saying to the governor:

We recommend that you issue a proclamation that every person within the state is commanded to obey the law and to refrain from all incendiary utterances. Make it clear that each able-bodied man between the ages of 18 and 45 is, in fact, a member of the militia and that if it becomes necessary he will be called into active service.

This looks like impressment of citizens. This will not be popular if people from nonmining sections are impressed and if men are taken from the mining regions the result will be charges like those after the Ludlow affair where some men took part in the fray who were not members of the militia. With the threats of the union men such as they are, the removal of U. S. troops seems ominous. The authorities promise to deport a number of trouble makers who are citizens of other states. It would be well, however, for them to ascertain that they really have an adequate force before preparing for the execution of such a difficult program.

It is natural, however, for the citizens of Colorado to feel irritated with the presence of the U. S. troops. They have been used to set aside the laws of the Colorado legislature as also those of the United States. They have created an intolerable situation but if anarchy follows their removal, the conditions may conceivably become worse.

On Dec. 1 the Committee on Industrial Relations com-

mences its inquiry into conditions in Colorado. The impression seems general that the militia will replace the army on that date but the change may be made sooner.

We are informed by Eli Jeffrys of the Jeffrys Coal & Mining Co. that after a short suspension of a week due to a misunderstanding, the Bloom mine at Starkville resumed operations. As soon as conditions were explained to Lindley M. Garrison, the Secretary of War, and to the colonel on the post, permission to reopen the mine was granted.

The Origin of the Possum-Hunting Movement

The following description of the uprising in western Kentucky is from the pen of Newell G. Alford, the engineer of the St. Bernard Mining Co. at Earlington, Ky.:

Coal mining in western Kentucky for the past few months has been beset by dangers which call to mind the mysterious operations of the Ku-Klux Klan. Night riding by masked men was revived in Kentucky and Tennessee some eight years ago when the tobacco growers banded themselves together in a secret order for the purpose of exterminating the cultivation of the plant until a higher price might be secured for their crops. Farmers ignoring their warnings were visited at night by bands of masked men and whipped, the offender's buildings were often burned, while there were many instances here homes were riddled with bullets and men, women and children were shot to death. Former Governor Augustus E. Willson finally checked these outrages by putting state troops in charge of the situation.

Depredations of a similar character were committed in Muhlenberg County in the early part of last April. This time the night riders operated under the name of "Possum Hunters." First a night fireman at the Gibraltar Mine near Central City was whipped by about 50 masked men under the shadow of night. Then an attempt was made to whip the store manager of the McHenry Coal Co. at Echols. This time the band was repulsed, four "Possum Hunters" being shot, while two were fatally wounded, their deaths being ascribed to quick pneumonia.

Movement Involves Five Counties

The field of activities has since expanded into Ohio, Hopkins, McLean and Butler Counties. Rochester, Beech Creek, Drakesboro, Cleaton, Bevier, Dawson Springs, Ilsey, Carbondale, White City, Daniel Boone and Nortonville have been raided and notice served that negro miners must leave the camps. The reply of the operators to these threats has in every instance, excepting that of Carbondale, been the retention of the colored men and an increase of the vigilance guard on duty at the various operations. Carbondale has furnished the setting for two raids and a death, a miner being killed when a house was perforated with bullets.

It is generally understood that the bond of secrecy among the "Possum Hunters" is extremely strong. They are initiated with a ceremony and the penalty for violation of their obligation is death.

Recent Acts of Violence

On the morning of Nov. 13, the body of Henry Allen, 30 years old, was found dangling to a limb just back of the Advance Coal Co.'s mine near Hillside in Muhlenberg County. The body was clad in underclothes and the hands were tied behind it. Allen, an alleged leader of the Possum Hunters, was under indictment at the time for banding together with others for the purpose of intimidation. It is assumed that his threatened violation of secrecy brought upon him the extreme penalty.

On the night of Nov. 14 a raid was made on the town of Island in McLean County and the tippie of the Consolidated Coal Co. was burned to the ground. This has been followed by a lull in night-riding activities.

Earlington, the coal center of Hopkins County, has been strongly committed to law and order for many years and is always ready to lend its strength for its enforcement. It is not true, however, that a block house was built and provisioned in this town. This precaution was taken at Carbondale, a small camp in the same county, isolated from the neighboring settlements. The sheriff of the county, Thomas Logan, has expressed himself as being able to prevent any further lawlessness and claims to have control of the situation in Hopkins County.

We have just received word that a coal tippie valued at \$35,000, and owned by Shelby Gish, of Central City, Ky., was destroyed by fire by the "regulators" recently.

Operators' New Illinois Organization

The Illinois operators expect to form a new organization which will amalgamate them all into a common federation. There are now three separate bodies, the Illinois Coal Operators' Association, with headquarters in the Reisch Building at Springfield; the Central Illinois Coal Operators' Association, which comprises most of the Springfield district, and the Coal Operators' Association of the Fifth and Ninth Districts of Illinois, which is composed of the operators in the Belleville district.

The new plan provides for a parent association with four subsidiaries. One would cover the Danville and Springfield districts, another the northern coal field, a third the Belleville district and a fourth the southern coal field. Each subsidiary will act independently in its own district but conjoint action will be taken to prevent the passage of such legislation as appears injurious to the interests of the coal industry and ill-advised from the standpoint of the public.

West Virginia Coal Mining Institute

The winter meeting of the West Virginia Coal Mining Institute will be held at Huntington, W. Va., Dec. 10 and 11.

The morning of Dec. 10 will be devoted to the address of the president, Neil Robinson, on "A Plea for Posterity," after which the following papers will be read: "Cost Accounting," by Richard Smethurst, of Cincinnati, O., and "Coöperation," by the Hon. Z. T. Vinson, Huntington, W. Va.

At 2 p.m., two papers will be read, one on "Mine Gases," by Frank Haas, of Fairmont, W. Va., and the other on "The Pottsville Measures West of the Kanawha and New Rivers," by Ray V. Hennen, of Morgantown, W. Va., followed by election of officers and business session.

Introductory remarks by J. D. Van Scoten, of Washington, D. C., will open the evening session at 8 o'clock, after which Miss Mary K. Quick, of Moundsville, W. Va., will read a paper on "The Visiting Nurse," and Dr. Peter Roberts, of New York City, one on "Teaching English to Foreigners."

The entire morning of Dec. 11 will be devoted to a discussion of questions pertaining to mining. Some of the queries to be submitted at the question-box session are: What is the best roofing material for mine tenelements? Assuming the force system of ventilation, is a door regulator preferable to a box regulator? Has the wisdom of the Compensation Law been proven by results so far obtained? Are oil safety lamps to be preferred to electric safety lamps in gaseous mines? Which is the best method of caring for the accumulation of dangerous gases in gob sections?

At 2 p.m., the following papers will be read: "The Benefit of Good Roads to a Mining Community," by the Hon. A. D. Williams, of Morgantown, W. Va.; "Storage-Battery Locomotives," by G. H. Shapter, Charleston, W. Va.; "Roof Supports," by Fred Keighley, Uniontown, Pennsylvania.

Extracts from a Superintendent's Diary

We have just passed through the excitement incident to the annual election of camp physician and as usual the best man didn't win.

During the past 18 months the man who was successful today has been living on the outskirts of our village and has been exerting himself worming into the good graces of all of our citizens. He had little difficulty in picking out families here and there who were dissatisfied with the efforts of the regular physician and after establishing friendly relations with them, he made use of their good will to his own advantage quite after the method so well understood by successful politicians.

The man whom he was undermining probably realized the danger but for reasons best known to himself, made no effort to block his enemy's campaign.

I foresaw the inevitable result months ago; it was history repeating itself to me as I had witnessed similar campaigns of quacking quacks at various times in the past, but my hands were tied. I was even more helpless than the chosen victim in that he might have struck back had he so desired, but I was absolutely helpless.

From the very beginning of my career as a mine superintendent this doctor question has persistently exhausted my patience and ridiculed my efforts to pass judgment.

The camp must support a physician and since he is to be everyone's physician, everyone ought to contribute toward his support. That's a self-evident, reasonable statement and everyone accepts it without argument, but any attempt to enlarge on that statement as a foundation is more than apt to inaugurate an earthquake.

If the officials of the operating company attempt to regulate the salary of the physician or the system of election or the educational requirements, they immediately run afoul not only the employees, but the company's legal department as well; these cautious lawyers know what it means to appear before a jury as defendant with medical testimony, when the plaintiff has a right to intimate that the physician is under obligations to the defendant.

If the salary of the physician is left to chance, it may become so small that no self-respecting physician will accept it, or so large that no self-respecting physician will enter the free-for-all fight necessary to win the appointment.

We have had physicians of all kinds. Some were strong on the pill treatment, while others ridiculed all pills. Some believed in prescribing for every ailment and others seldom prescribed at all. Since the doctors have to furnish the drugs as part of their contract, the ones who were free and easy with their drugs escaped the criticism of being stingy, but they were often grievously berated for unpleasant concoctions furnished. Because of the fact that the doctor's compensation is not dependent on the number of calls that he makes, it is easy to imagine that he will exhaust all reasonable means to discourage requested visits; at any rate every time one of them leaves an unpleasant dose, his motive is questioned.

And our physician's motives are subject to suspicion, not only at home but also in the world at large. The doctors' associations look with disfavor upon the control system and often accuse our physicians of violating the ethics of their profession.

Possibly some of these things have had an influence on our retiring physician; at any rate he does not seem to resent the outcome of the election as much as I do.

Final Figures on 1913 Coal Production

The U. S. Geological Survey has made its final report on coal production in 1913 in the United States.

The production of anthracite coal in Pennsylvania in 1913 was 81,718,680 long tons (91,524,922 short tons), valued at \$195,181,127, an increase of 6,395,825 long tons, or 8.5%, and an increase in value of \$17,558,501, or 9.9%. The gain is attributed to the light production in 1912 as a result of the fact that the mines were idle that year in April and May during the wage negotiations.

The production of bituminous coal and lignite was 478,523,203 short tons as compared with 450,104,982 tons in 1912, a gain of 28,418,221 tons, or 6.3%, and in value \$47,324,213, or 9.14%. The total value of the bituminous coal produced was \$565,307,658 in 1913 as compared with \$517,983,445 in 1912. The average price of bituminous at the mines in 1913 was \$1.18 per ton, the number of days worked was 232, and the average number of employees was 571,899.

Culm Recovery at Nanticoke

BY FRANK H. KNEELAND

SYNOPSIS—Culm is conveyed to the washery by means of drag lines. The larger pieces are separated out and picked either mechanically or by hand after which all sizes above pea are crushed to that grade. All good coal above $\frac{1}{8}$ in. in diameter is loaded and shipped while that below this size is carefully stored on a separate dump heap.

The virtue of one age may be the sin of another; the economy of one generation, the extravagance of the next. So far as coal mining is concerned what small profits are

small sizes such as chestnut and under could not be utilized to advantage. Certain it is that such sizes could not be sold, with the result that vast amounts of this material accumulated as dump or culm banks throughout the coal regions of eastern Pennsylvania. Today, all sizes of anthracite above $\frac{1}{8}$ in. possess a definite market value, and no inappreciable percentage of the revenue of many of the operating coal companies is derived from working over these culm banks and separating out and preparing for market the good coal contained therein.

Near the town of Nanticoke, in Luzerne County, Penn.,

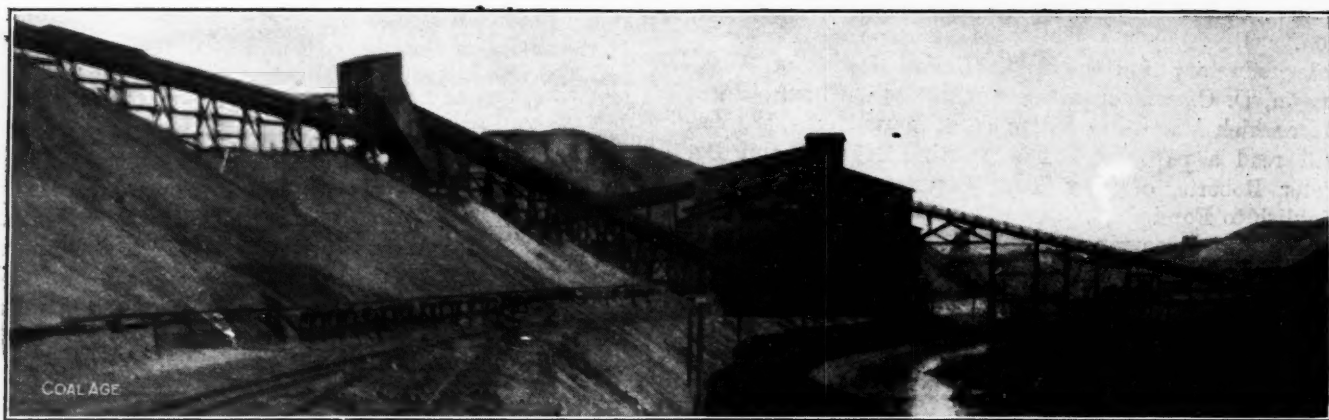


FIG. 1. GENERAL VIEW OF THE WASHERY

made today are, generally speaking, secured through economies in production rather than through increases in the selling price. Many of us well remember the time when the beehive oven was considered the "last word" and most economical means of producing a satisfactory metallurgical fuel. Today, however, through the use of byproduct ovens enough material is conserved from the gases evolved to almost if not entirely pay for the whole coking operation, leaving the coke itself as practically a clear gain.

But the savings effected through modern methods and processes are by no means confined to the bituminous regions. Years ago during the earlier stages of anthracite development, there existed the firm belief that the

the Susquehanna Coal Co. has in operation a culm-recovery and washing plant which is well worthy of notice. The washery proper, which may be seen in Fig. 1, draws its supply of culm from at least three separate and distinct banks by means of scraper lines entering the building from opposite sides.

To begin at the beginning, a single one of the culm banks being worked covers an area of about 440 acres to an average depth of approximately 100 ft. Assuming that this culm in place weighs only 50 lb. to the cubic foot, there is here alone 95,832,000,000 lb. of material, or 47,916,000 tons. It should be remembered, however, in considering these vast quantities that by no means all of this material is marketable fuel.



FIG. 2. MACHINE FOR LOADING CULM INTO CONVEYOR



FIG. 3. OUTER END OF CONVEYOR

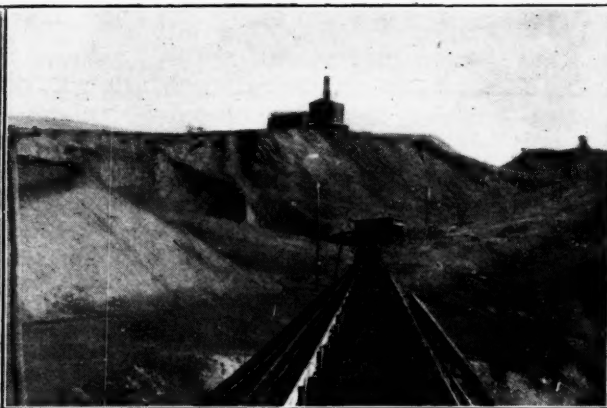


FIG. 4. LOOKING DOWN THE SECOND CONVEYOR FROM THE DRIVING END

This culm is transported to the washery by means of drag-line scraper conveyors into which it is washed by streams of water under considerable pressure, or by means of the device shown in Fig. 2, which is an electrically driven shovel or elevator to raise and spout the culm into the conveyor. In the figure this machine is shown standing upon ground which has been reclaimed from the culm bank.

Fig. 3 shows the outer or receiving end of the drag-line conveyor. This line is about 175 ft. long on a slope of approximately 25 ft. to the 100. It delivers to a second drag line 440 ft. long on a slope of approximately 21 ft. to the 100. Each conveyor is separately driven by an electric motor.

As may be clearly seen in Fig. 3, the outer end of the

100. This chute discharges to the main drag line leading to the washery. This line is 468 ft. long and has a capacity of about 150 tons per hour. It is composed of two strands of Simplex chain, similar to that used in the first and second drag lines above mentioned, between which spaced every 36 in. are flights 8 in. deep and 26 in. wide. These, of course, operate in a properly formed trough. A general view of the flushing trough, the lower end of the main drag line, and the refuse disposal dump from the washery, may be seen in Fig. 5. Another single-strand drag-line conveyor, which is also visible in this figure, brings coal from another culm bank and discharges it to the main drag line a short distance from its lower terminus. A 100-hp. motor drives the main drag line.

On entering the washery, the coal is divided, one-half

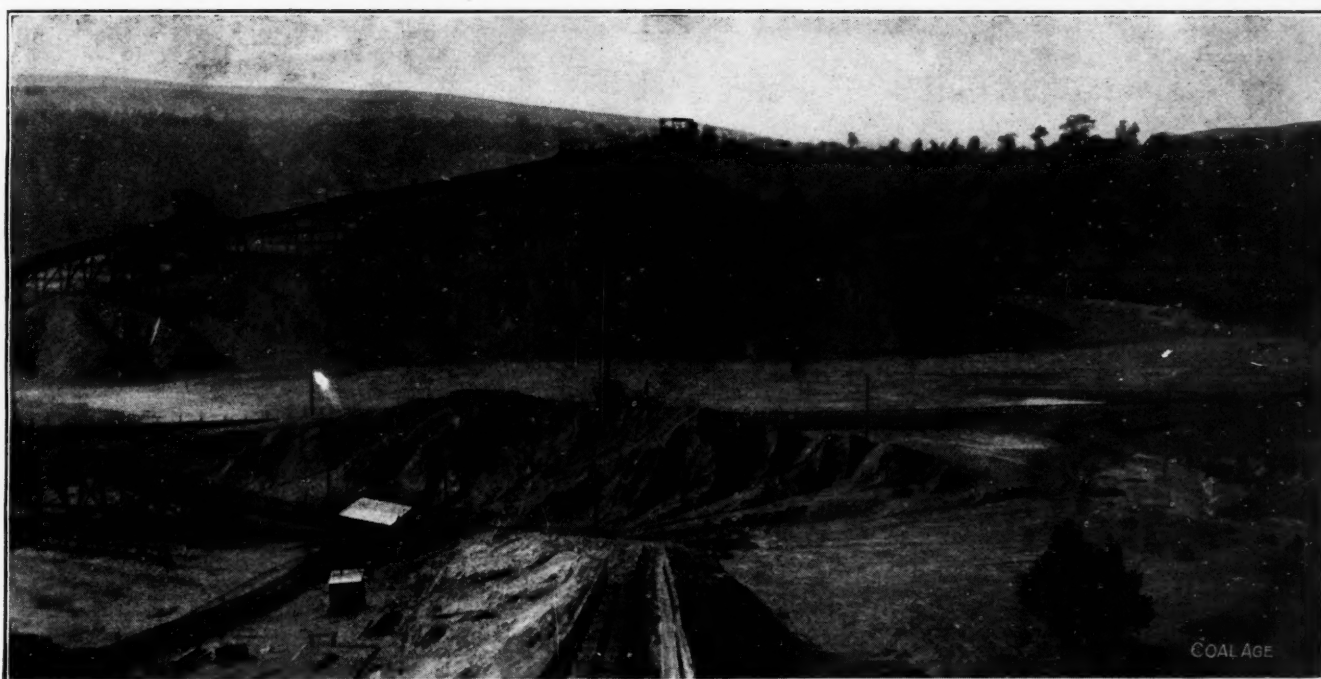


FIG. 5. LOOKING DOWN FLUSH-TROUGH DELIVERING TO MAIN DRAGLINE; NEW REFUSE DUMP IN THE MIDDLE BACKGROUND

first drag line is in a considerable depression. In 1885, a cave occurred in the No. 1 Slope of the Susquehanna Coal Co., resulting in the loss of 29 lives. The men were caught in an old swamp under this culm bank. The recovery of the bodies was abandoned only after much effort and expense. The depression in the top of the culm bank due to the cave was about 150 ft. across and from 90 to 100 ft. deep. The low point where the end of the drag line is now located is very nearly at the exact spot where the cave occurred.

As culm banks were originally considered entirely a waste product, this one in many places has been covered with from 10 to 20 ft. of ashes from the boiler plant. These must now be removed before the culm is taken out. They are accordingly flushed off from the top of the pile by means of streams of water which convey them to a new ash heap. In Fig. 6 may be seen a workman controlling an ash-flushing stream as it travels down the hill.

From the discharge end of the second drag line, which like the first is a 9-in. pitch Simplex drop-forged chain carrying flights at suitable intervals, the culm is discharged to a flush chute. This is approximately 400 ft. long on an inclination downwards of about 20 ft. to the

going to each side of the building. A second conveying line of the same capacity as the one above mentioned enters the washery from the opposite side, the material delivered by it going through the same processes as that from the side considered.

Nine sets of shaking screens are provided on each side of the building. There are also three other shaking screens, making 21 sets in all. Water is supplied from an overhead tank assuring an even supply at constant pressure. All shakers are fitted with Robinson bronze sprays, giving two jets to each segment of the screen, which is abundant for this purpose.

The coal as it comes from the conveyor is passed over a shaker consisting of four decks, the upper with 5-in. perforations, the second with 3¼-in.; the third with 2⅜-in. and the bottom deck being blank. This blank deck discharges to a second set of shakers. What coal comes over the largest perforations is hand-picked, while the discharge from the second and third deck is passed through anthracite spirals, the coal and slate being thus separated. All of these grades are then run through breaker rolls and crushed to pea size and smaller.

The second set of shapers separates the stove, nut and

pea coal which also is run through spirals. The nut and pea, after spiraling, are jigged to remove all impurities, after which all of these sizes above the pea are crushed to that size.

All sizes smaller than pea, from both sides of the building, are run over three banks of shakers of three screens each, separating the Nos. 1, 2 and 3 buckwheat. The material passing through the smallest perforations, or those $\frac{1}{16}$ in. in diameter, goes to a settling tank from whence it is conveyed onto the refuse dump by means of another drag line. The No. 1 buckwheat, after leaving the shaker, is jigged before going to the storage box. The silt or fine material carried in suspension by the water, as it leaves the settling tank, is deposited at the base of the refuse dump. From here the water filters through a railroad embankment to a small stream where it is impounded and again pumped up to wash the coal.

The No. 2 and No. 3 buckwheat are conveyed direct from the shaker to the storage pockets without washing or jigging. Each shaker is driven by 13-in. eccentrics giving a 5-in. throw. Parrish or flexible wooden eccentric rods are employed, while the shakers are suspended by elastic boards rigidly fastened at both top and bottom. All jigs are driven in pairs by a 10-in. belt from the main drive shaft. All other machinery is driven by

tivity of what was even then marketable fuel was rejected by the slate pickers, together with considerable amounts of coal, to which slate adhered. The culm banks which today mar the landscape in many portions of eastern Pennsylvania represent in many instances as good a quality of fuel as it was possible to secure from any of the coal beds. As anthracite is made up mostly of fixed carbon, it weathers but little if any. The result is that the marketable coal secured from the culm banks when properly prepared and washed, as has been above described, represents as fine a grade of fuel of its kind, as it is possible to secure by direct mining at the present time. The cost of production on the other hand is comparatively small, since almost the entire process is carried on by the use of machinery.

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West Virginia Mining Fatalities in October

The State Department of Mines has just issued the list of fatalities occurring in the coal mines of West Virginia during the month of October, showing that 34 deaths resulted from various accidents in that period. Twenty-six of these deaths were caused by falls of roof and coal, three by mine cars and locomotives, three were electrocuted, one crushed in mining machinery, and one killed by explosion.



FIG. 6. LABORER CONTROLLING ASH-FLUSHING STREAM FROM TOP OF CULM BANK

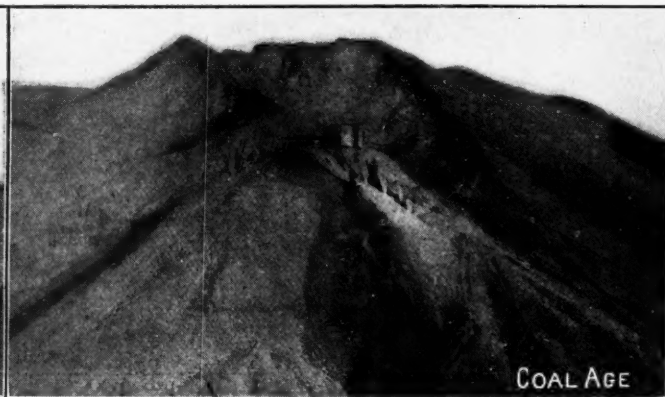


FIG. 7. FLUSHING ASHES FROM TOP OF CULM BANK

1½-in. transmission ropes which are not spliced but are connected by Scott rope sockets. The main power belt for the entire building is of 8-ply rubber 24 in. wide.

The wastage or coal which is spilled when loading cars for market is brought to a tank below the track level from whence it is conveyed to the shakers for rescreening. The pump supplying the washery is a Jeansville simple duplex plunger machine with steam cylinders 30 in. in diameter, water cylinders 12 in. in diameter and having a 36-in. stroke. This machine runs at approximately 20 strokes per minute.

While means of successfully utilizing anthracite coal of $\frac{1}{16}$ -in. diameter or less has not yet been devised, except through briquetting, it is believed that some such means may be developed in the future, and as has been stated above, the small coal from this washery is being carefully deposited by itself and not allowed to be contaminated with ashes or any other refuse. Future years may quite possibly see developed means of using such fuel as this to commercial advantage.

The early mining of anthracite was conducted in the best and cleanest coal measures. An appreciable quan-

Of the month's fatalities seven occurred in McDowell County, five in Fayette, five in Kanawha, four in Mingo, three in Raleigh, three in Logan, and one each in the counties of Marion, Ohio, Preston, Boone, Taylor, Tucker and Mercer. Of this number 17 were Americans and 17 foreigners.

The report just sent out by Chief Henry has a new feature, which shows where and under what conditions each man lost his life, in the hope that it may have its effect as a warning, and prevent workmen in the mines from taking similar risks without thoroughly acquainting themselves with the conditions. In the letter accompanying the report Mr. Henry says:

An effort has been made in making up this list to show just exactly how these persons have been killed, trusting that all who read the same may take warning and not permit themselves to take similar risks, which may also result fatally. The persons reading the list, occupied in similar positions, should profit by the mistakes of the unfortunates, and it is the duty of mine officials to eliminate, as far as possible, dangerous conditions and practices.

All are earnestly requested to carefully note how accidents occur, and then eliminate opportunities for repetition of same.

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The Manierre Loader, known to coal men as an efficient box car loader for lump and small coal, has recently entered a new field. The Charles Warner Co. has installed one at their Cedar Hollow plant at De Vault, Penn., to load lime. As large lump lime breaks more easily than lump coal, and as this loader has been in successful operation for over six months, coal men are drawing an interesting lesson, which applies in their own field, from this recent departure.

Briquetting Plant of the Pacific Coast Coal Co.

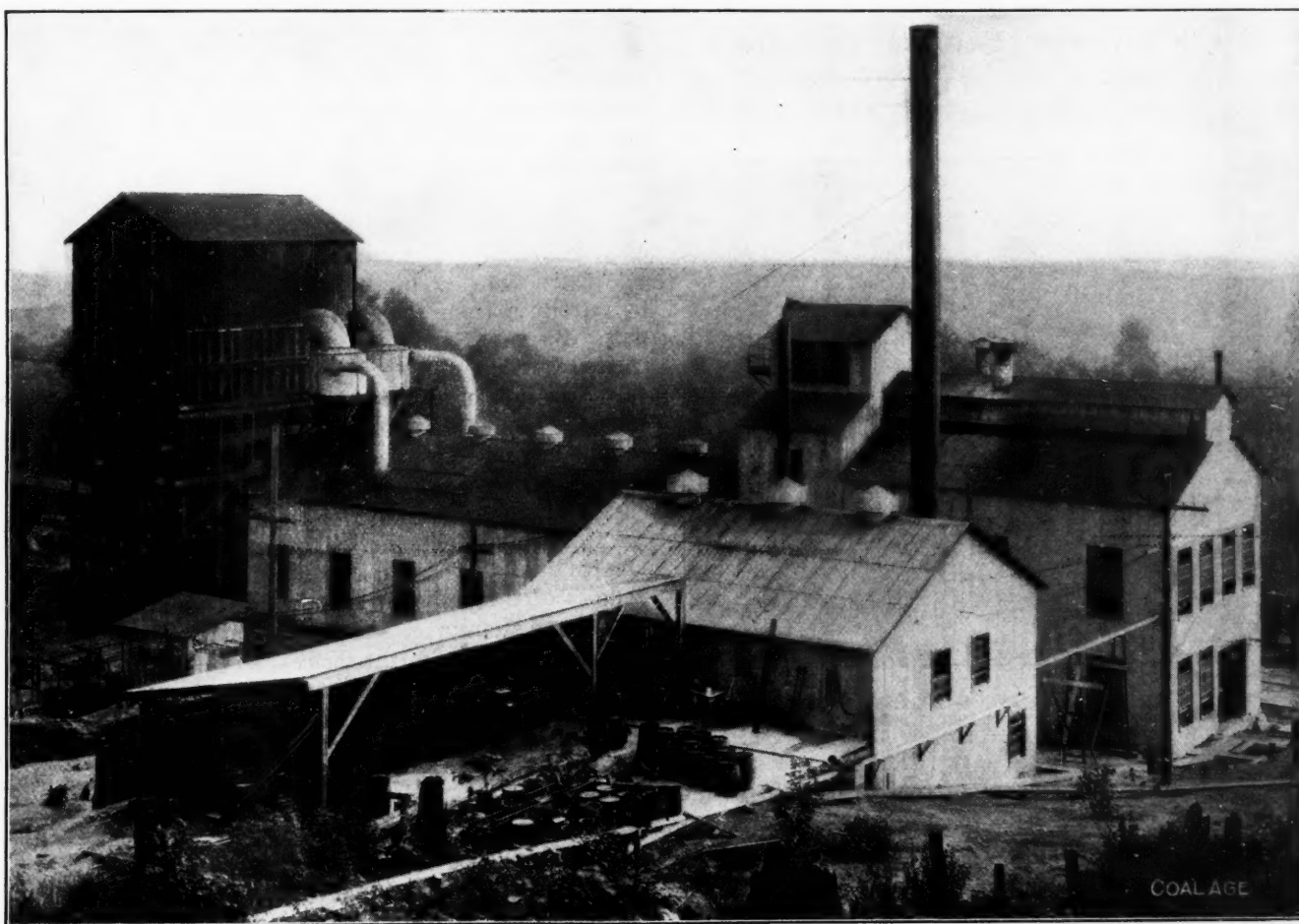
By W. L. KIDSTON*

SYNOPSIS—A new plant using asphalt as a binder and having a capacity of approximately a million briquettes per 10-hr. shift is here described.

The Pacific Coast Coal Co., of Seattle, Wash., has been operating bituminous coal mines for a number of years at Black Diamond, Franklin, Burnett and Newcastle in Washington. These coal properties are comparatively short distances from Seattle and are at the terminus of branches of the Columbia & Puget Sound R.R., which is

Consequently, the late James Anderson, chief engineer, was commissioned to investigate the several plants operating in the United States and his studies led to the employment of the Malcolmson Briquette Engineering Co. to design, superintend the erection of, and turn over in working order a briquetting plant of a given capacity.

The original design of the plant called for coal-burning furnaces and the use of coal-tar pitch as a binder, but superior experimental results with asphalt led to its adoption for this purpose. The asphalt is eventually to be



PACIFIC COAST COAL CO.'S BRIQUETTING PLANT

also operated by the coal company. The Black Diamond and Newcastle branches of the railroad converge at Renton on the southern shore of Lake Washington, where the coal bunkers of the company have been located for several years and where it owns suitable land for further development and for storage purposes. It is here that the company is now solving, by means of a modern briquette plant, some of its important fuel problems.

For some time it had been thought by the Pacific Coast Coal Co. that the most advantageous way to handle certain of its valuable coals would be to briquette them.

manufactured at the briquette plant, this change leading to the substitution of oil-burning furnaces which will ultimately use the distilling plant's byproducts.

As now constructed, the plant includes 10 buildings and 3 tanks. The buildings are: Raw coal bin 32x42 ft., drier building 36x105 ft., press building 32x64 ft., laboratory and office 18x28 ft., briquette-storage bin 20x32 ft., demonstrating station 12x20 ft., watchman's cottage 22x28 ft. and a pump house.

The raw-coal bin is constructed entirely of fir timber bolted together. It stands 80 ft. high over all and contains two compartments of 400 tons capacity each.

The drier, press, transformer, and boiler and kettle

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buildings are constructed of structural steel covered with corrugated galvanized-iron sides and roofs, with the exception of the drier and press buildings, where the roofs are of asbestos-covered corrugated iron. The demonstration station, briquette-storage bin, laboratory and office, cottage and pump house are all of the usual frame construction.

The raw coal comes from the mines at Black Diamond, Newcastle and South Prairie in standard hopper-bottom coal cars, which are discharged into an iron-lined concrete hopper. A Link-Belt reciprocating feeder draws the coal from the bottom of the hopper and discharges it into the buckets of a gravity-discharge elevator of 100 tons per hour capacity.

From the elevator the coal is delivered by a conveyor into one or the other of the two compartments of the raw-coal bin, each compartment of which has a capacity of 400 tons.

ALL QUANTITIES ARE CAREFULLY REGULATED

Regulation of the quantity of the coal in the manufacture of a compact and homogeneous product begins in this



REAR VIEW OF PLANT

plant at the time the coal is drawn from the raw storage. To regulate, first, the amount of coal to be used in the briquette; second, to control the proportions of the various constituents, and third, to insure a uniform mix, a positive mechanical feed of the plunger type forces the discharge from each of the compartments of the raw-coal storage bin onto its respective horizontal flight conveyor.

A motor through a chain-belt and sprocket connections operates the feeders. Eccentrics control the stroke of the plunger and the sprockets regulate the speed. Each feeder is designed for a capacity of 50 tons per hour but is operating under present requirements at the rate of 30 tons.

Flight conveyors, inclosed by steel casings, deliver the raw coal either to a pulverizer made by the Williams Patent Crusher & Pulverizer Co., or to one or both of the two driers made by the Ruggles-Coles Engineering Co., of New York.

At this point in the plant means are provided for putting the raw coal through the driers and crusher in any

order either desirable or necessary to put in proper condition for mixing and fluxing.

The Ruggles-Coles driers are of special design for handling raw and fine coal. They are 9 ft. in diameter and 65 ft. long. Heat is supplied by oil fuel in Billow burners and furnaces made by the National Supply Co., of Chicago. The driers are driven at 8 r.p.m. and the work of reducing the total moisture in the coal to one-half of one per cent. is assisted by the drier fans which direct the flow of heat through the driers and at the same time draw the moisture-laden air from them and exhaust it through Cyclone dust collectors which are located just to the right of the raw-coal storage bin and immediately over the end of the drier building.

The drier fans are 4 ft. in diameter, and are each driven by 15-hp. motors. A General Electric Co. centrifugal compressor running at 3600 r.p.m. supplies low-pressure air for the Billow burners.

After the coal has been reduced to a sufficient fineness with all the dust returned to it from an elaborate system of collectors, and is in a state of almost absolute dryness, it is delivered by bucket elevators to the regulating bin. It is necessary that the moisture be reduced to a negligible quantity that the mixing may be thorough and the fluxing uniform.

On the discharge platform of the regulating bin an employee, called the "mixer," is stationed. He receives his instructions as to the quantity of coal and binder to introduce from the pressman by means of bell signals. By gate control, he regulates the amount of coal carried by an apron conveyor, and, by a steam-jacketed valve, the flow of asphalt binder which is introduced just after the coal enters the mixing conveyor.

This mixing conveyor is a horizontal steel shell with a rectangular cross-section and extends 30 ft. from the discharge of the apron conveyor from the regulating bin to the feed box of the fluxer. Within the shell are mounted longitudinally two shafts upon which are set series of paddles of the propellor type, which churn the coal and binder and simultaneously push it toward the fluxer.

From the paddle mixer the coal and the binder are discharged into a feeder which supplies the fluxer. The final and most important stage in the process of preparation takes place in this latter machine. It is here that not only the binding qualities of the mix are perfected, but the future physical properties of the briquette are created.

This fluxer, with 30 tons capacity per hour, is the largest of its type now employed in briquetting coal. It consists of three superimposed horizontal cylinders in a single casting. Within each cylinder there is mounted a shaft upon which are set arms, or paddles, which agitate the mix while superheated steam is introduced through double horizontal rows of tuyeres on each side of the cylinder. The function of this dry steam is to maintain the asphalt in a sufficiently fluid condition to permit its being driven into and impregnating the interstices of the coal under the beating action of the fluxer paddles.

From the fluxer the material passes through two screw conveyors to the feed box of the press. These conveyors were built under the Schorr patent, which is controlled by the builders of the press. It is necessary, where asphalt is used for binder, to cool the fluxed material before it enters the press, and this is done by an air-exhaust system attached to the conveyor and also to the press-feed box.

THE PRESS

The Rutledge briquetting press used in this plant takes its name from J. E. Rutledge, vice-president of the Malcolmson Briquette Engineering Co., although invented by G. Komarek, of St. Louis. It is the third press of its kind to be constructed and the first to take the name of Rutledge. It embodies several improvements over the others.

Essentially, the Rutledge press consists of three parts—two major shafts with punch-ram attachments and an endless bed with die-plate sections. The three are synchronized by proper gear connections. The machine is driven by a 75-hp. motor connected by friction clutch and silent-chain drive.

Each shaft is fitted with 12 punch rams, each ram having 14 punches. The rams are so arranged that they assume an exact vertical position before they engage the die plates. A vertical pressure is exerted upon the material within these die plates from both above and below. Each pulsation of the press produces 200 tons pressure, which is equivalent to about 30,000 lb. upon each briquette.

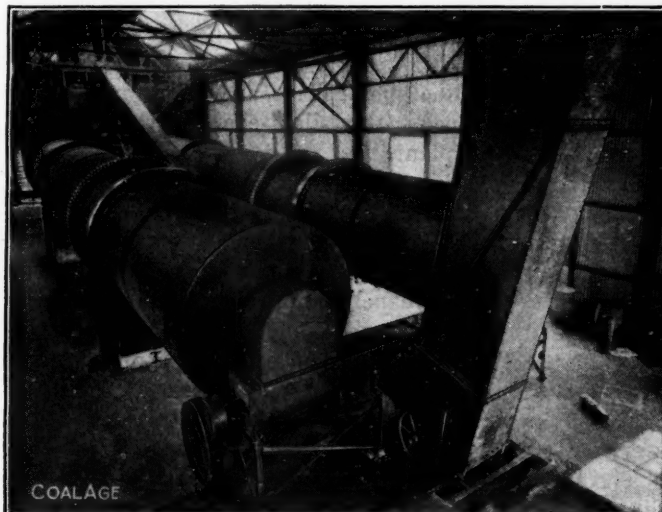
ings are of bronze alloy made especially to withstand high pressures.

The lubricating system is both unique and practical. The oil is driven through the main shafts to the interior of the press and from there works its way to the surface, properly lubricating all parts and preventing the entrance of any dust or grit. The press and its installation alone cost about \$50,000.

As the briquettes leave the press they slide down over a perforated apron to the cooling belt, or conveyor. The belt is over 600 ft. long and is composed of 47,000 parts. It is made up of flat links giving a large area for the free circulation of air. As the briquettes are carried forward and up to the briquetting storage pocket, they are subjected to a fine spray of cool water which assists in reducing their temperature as well as hardening them before they are discharged into the bin.

HARDNESS OF PRODUCT IS SOUGHT AND ATTAINED

By the proper pulverizing of the coal, the use of all the dust, the employment of asphalt as a binder, and the efficient fluxing of the mix, a briquette of remarkable hardness is produced. They are dumped from the cooling belt

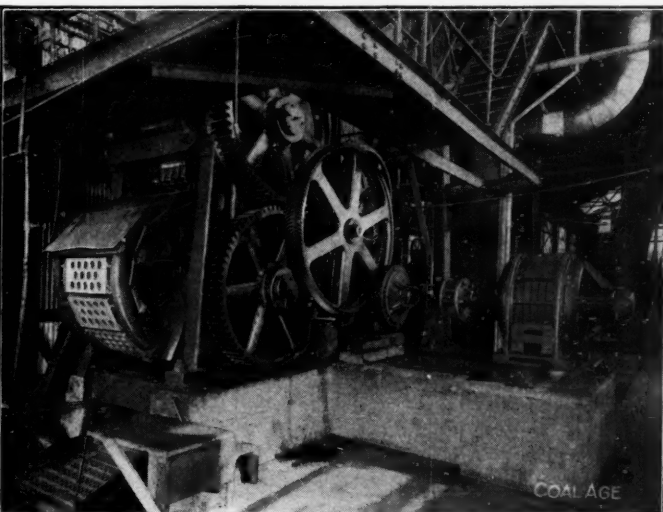


BIG DRIERS FOR THE COAL

Attached to the upper group of rams are 12 arms, or pilot punches, one corresponding to each ram, which engage the corresponding die plates and time them for the punches. It is the pilot punches which furnish the motive power for the die-plate bed. So nicely is the work of the press timed that only $\frac{1}{64}$ in. is allowed for clearance. Turning over at the rate of 10 r.p.m., the press produces 30 tons per hr., or 1,000,000 briquettes per day.

The press punches are constructed with removable tips, which not only provides for quick adjustment and economical maintenance of the parts receiving the greatest wear, but also for the change of the brand or trade mark, which is impressed on every briquette. This brand designates the particular coal used and serves as a guarantee to the consumer that he is getting the quality for which he is paying. These tips are made from forged and hardened nickel-steel.

The press weighs 80,000 lb. and all the wearing parts are made from nickel-, manganese- or vanadium-steel. The rollers are of nickel-steel, the tracks of manganese-steel, the cams and springs of vanadium-steel. All bush-



CLOSE VIEW OF THE BRIQUETTING PRESS

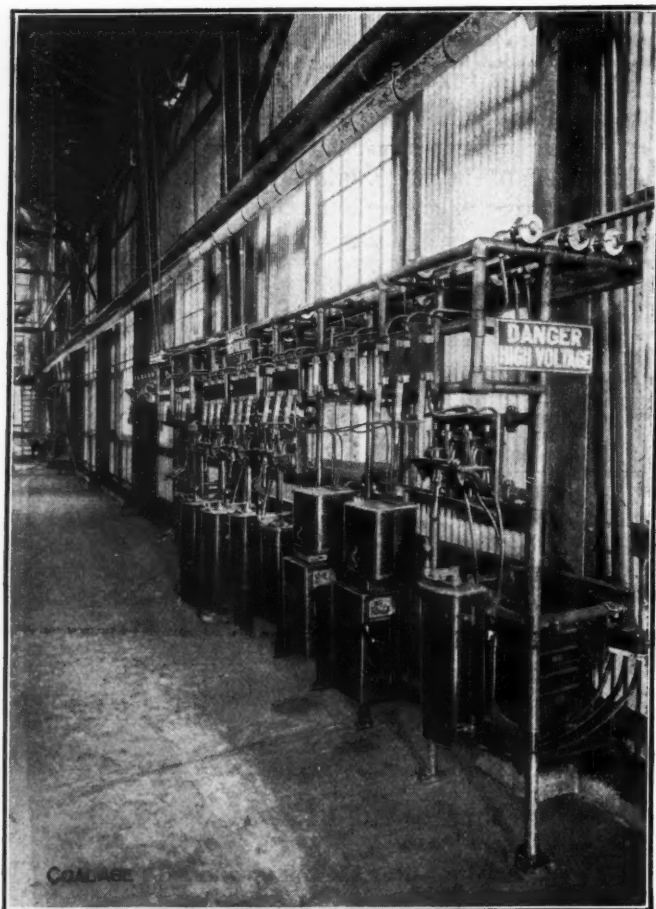
onto a cross-conveyor over the bin and in turn discharged on a vibrating baffle, thence to another baffle, from which they enter the bin. From here they are discharged direct to standard coal cars for shipment. The breakage is practically nil.

The briquettes now made weigh 10 oz. each. They are cylindrical in shape with a diameter of $2\frac{1}{4}$ in. and a maximum height of $2\frac{3}{4}$ in. and have $\frac{3}{8}$ -in. dished heads. Their hardness can best be stated in percentage of breakage under the standard tumbling test employed by the United States Government in its investigations at St. Louis. There the tumbling tests showed from 10 to 12 per cent. of breakage for the usual commercial briquettes, while similar tests on the Pacific Coast Coal Co.'s product show but 3 per cent. breakage, indicating a superior hardness.

Asphalts of the specified grades are received in barrels at the oil spur at the rear of the plant from whence they are carried by gravity in a barrel chute to the asphalt yard on a level with the charging floor of the boiler and kettle room.

There are two melting kettles of 40 barrels capacity each, placed in a specially designed setting. The single Wickes boiler employed in the operation of this plant is fired by oil through Jordan burners.

At present, oil is received in tank cars over the same route as the asphalt and is stored in steel tanks on the side hill. From these tanks it is drawn off by gravity through an insulated steam-heated pipe line to the boiler house. Future plans of the company, however, contemplate the purchasing of crude oil and its refining at the plant for the purpose of obtaining the exact grade of asphalt required in the briquetting process. Fuel oil will then be a byproduct to be used as required about the plant.



THE ELECTRIC CONTROL SYSTEM

Fuel-oil circulation is maintained by a Billow pumping system installed by the National Supply Co., of Chicago. Asphalt circulation is secured through a rotary pump made by the Kinney Manufacturing Co., of Boston, and by steam-jacketed lines and valves.

Special attention is given to the asphalt-feeding equipment. It is the mixer attendant's duty to see that asphalt is maintained at a uniform temperature and head, and that there is a uniform flow through the steam-jacketed valve into the machine. Provisions are made for a flow through a steam-heated valve from the regulator to the kettles. Thus circulation of the asphalt is kept up continuously and a uniform static head maintained.

Temperature regulation of the binder is not only essential but that of the coal and steam as well. To this end automatic Bristol recorders giving 24-hr. graphic records are placed directly in front of the operator in charge

of each movement dependent upon critical temperatures.

Water for the system is heated and filtered by a Warren-Webster feed-water heater under automatic thermostatic control. Superheated steam for fluxing is generated in a special oil-fired Foster superheater, which has a capacity for raising 2000 lb. of steam per hour at 150 lb. pressure to 556 deg. F.

Electricity is purchased from the Puget Sound Traction, Light & Power Co., and delivered at 2300 volts alternating current to the transformer station, where it is stepped down to 440 volts for the motors and 110 volts for the lighting circuit. It enters the plant through two main control boards and is distributed throughout the works entirely in conduit.

Plant operation is divided into two groups—the drier group and the press group. Each has a main control board which permits direct or automatic regulation, not only of each motor, but of each group as a unit. The drier group is automatically controlled by an electric tripping device which is thrown by an overflow from the regulating bin.

As the press is the final and perhaps the most important machine in the process of briquetting, the control of the whole plant or any group or unit thereof is directly under the pressman by means of complete bell-and-light-signal apparatus, as well as a speaking-tube system. Every machine has an individual motor drive, and, where not direct connected, is equipped with a silent-chain drive, of which there are 15 in the plant.

For a daily check on all materials used in the manufacture of briquettes the necessary laboratory equipment has been installed and a competent chemist employed. As this is the first plant to use asphalt on a large scale it has required some careful experimental work, and special attention has been given to the study of the physical properties of the binder, much importance being attached to the penetration test. Besides the investigations conducted with reference to the asphalt, complete analyses are made every day of the coal and the briquettes.

The plant above described was constructed under the direction of J. C. Ford, president of the Pacific Coast Coal Co., and by his departments of engineering, building and mechanics, represented respectively by N. D. Moore, D. C. Brown and D. O'Leary. Field construction was in direct charge of Ralph Galt, briquette engineer, who is now superintendent of operation.

Coming Meetings

The American Society of Mechanical Engineers will hold its annual meeting in New York City, Dec. 1, 2, 3 and 4, 1914. Calvin W. Rice, secretary, New York City.

The American Mining Congress' seventeenth annual session will be held at Phoenix, Ariz., Dec. 7, 8, 9, 10 and 11, 1914. J. F. Callbreath, secretary, Denver, Colo.

The Coal Mining Institute of America will hold its winter meeting Dec. 8 and 9, 1914, at the Fort Pitt Hotel, Pittsburgh, Penn. Charles L. Fay, secretary-treasurer, Wilkes-Barre, Penn.

The West Virginia Coal Mining Institute's winter meeting will be held at Huntington, W. Va., Dec. 9, 10 and 11, 1914. Prof. E. N. Zern, secretary-treasurer, Morgantown, W. Va.

The American Institute of Mining Engineers will hold its annual meeting in New York City, beginning Feb. 16, 1915. Bradley Stoughton, secretary, New York City.

The Kentucky Mining Institute's winter meeting will be held Dec. 4 and 5, 1914, at the Seelbach Hotel, Louisville, Ky. Ivan P. Tashof, secretary-treasurer, Lexington, Ky.

Editorials

The Colorado Mine War

Under this title the Rev. A. A. Berle, of Cambridge, Mass., writes in the *Bibliotheca Sacra* with great sanity and conviction on the recent events in the mine regions of Colorado. A 24-page reprint lies on our desk which anyone may have on application. So much of what he has said we have endeavored to say, howbeit probably with less force, in our editorial columns and in other parts of the paper and consequently we do not wish to be unduly critical where our opinions differ. However, we do take issue with these remarks:

The State of Colorado must settle, before it settles all else, the question whether it is to have a state administration which will uphold law and will maintain order, and will do this without the intervention of the President of the United States and the military forces of the Union. At the present time, men are being denied their fundamental constitutional rights by the presence of the armed forces of the United States. The right of private contract, the right to seek employment and continue therein unmolested, has been destroyed, and there can be no peace till these are restored. There is no genuine pending issue which is not provided for in the civil code and there is no wrong for which the laws and courts of Colorado do not provide adequate relief. It is to the law and the courts to which these issues must be brought for their settlement.

With his declaration that the laws and courts should dominate we have no contention, but we do not see any reason justifying the military forces of the United States in being just now a law-disregarding body. There is no reason why they should abridge the right of public contract in Colorado any more than that they should do so in the Philippines.

That they have violated the rights of the citizens is due to their perverted use by the bureaucracy at Washington, and not to any inherent defects in the U. S. military forces. The militia of Colorado would possibly be no better and even might be worse if the governor of that state was as subject as the Wilsons to the hypnotic suggestions of the exploiters of labor.

Before the U. S. Army was ordered to the mining camps of Colorado, we advocated its use in settling the difficulties there existing. But we do not know whether we should now continue such advocacy in view of the fact that Colorado, at last, seems almost as a unit in standing behind the militia in defense of order. A new governor, G. A. Carlson, who appears to be less pliable than his predecessor, E. M. Ammons, will soon come into office and the voters seem to have elected him because they thought he would act promptly and with decision. The present governor is now prepared to act at least a little less flinchingly than before.

Perhaps a sufficing militia properly backed by funds can be secured. Consequently despite the promises of trouble from labor leaders, the state troops of Colorado may be able to handle the situation. At this distance we cannot presume to make judgment, which must be hard even for those who are on the spot. Certainly we have no brief against the use of militia for promoting order if they are adequate in themselves and in their support for the work proposed.

But we have always been prepared to hope that the autocracy at Washington might learn that this is the United States and that there are laws, at least in time of peace, which even the most arrogantly righteous of persons must obey. The oath of office might yet rise to plague the President. He might yet realize that he was not called like Deborah to make rulings on the spur of the moment in order that happiness and peace might come to the poor bewildered American people. We do not want to be dogmatic. Perhaps the Massachusetts divine, however, is right. He may know that the President is beyond reason.

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Railway Rates and Their Relation to National Prosperity

An interesting address on the regulation of railway rates was delivered recently by E. B. Leigh, a prominent industrial manager in Chicago. In commenting on the Interstate Commerce Commission's disavowal of all right or power to consider the case of the railroads in the light of its influence as a stimulator of business, Mr. Leigh says: "It is manifestly of the utmost importance that somewhere in our government, responsibility shall be for that specific promotion of the general welfare which consists of protecting the railways against influences, governmental and otherwise, which tend to impoverish the roads, and with them the whole people." Mr. Leigh rightly contends that the general railway problem has been committed by congress to the Interstate Commerce Commission, and that the latter body is clearly shouldered with the responsibility. The powers now delegated to the commission make it more of a legislative than a judicial body.

Much of the wonderful progress of our country has been due primarily to the railroads. In developing their territories, they become immense consumers of material and thereby doubly contribute to general business prosperity.

The Commission as now created is possessed of greater power for either good or evil than has ever before been conferred upon any governmental body. It can confiscate private property or it may be the greatest of all conservators of the public good. It can upset industries or it may establish normal business and carefully regulate commercial conditions.

It is about time the United States Government came to believe more in the principle or plan of industrial progress through encouraging business. Federal solicitude for the welfare of the individual might be exercised with no little profit to the nation as a whole.

The railways have nothing to sell but transportation, and yet they constitute our greatest industry next to agriculture. Nearly 50 per cent. of the total iron and steel production of the country is consumed by the railroads, so it is quite evident that any restriction of railway consumption must seriously affect the country's prosperity.

In conclusion, Mr. Leigh asserts that unless the rail-

roads are placed in a position to make purchases on a normal scale, a return of business prosperity will be seriously retarded. COAL AGE is quite of the same opinion, and although the coal industry is by far the greatest freight producer in the United States, we suggest that the Interstate Commerce Commission meet the situation more squarely, and endeavor to apply such first-aid to the railroad business as will help lessen the present industrial paralysis.

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The Closing of the Lake Trade

The Lake shipping season is over, and it is estimated that the bituminous movement will aggregate between 20 and 22 million tons. This is rather disappointing, as the growth of the Lake business has been rapid the last few years, and the high mark of 1913, 28 million tons, has been looked upon as a normal season.

However, when we consider the business conditions of the entire country during the past year, the Lake coal traffic of 1914 has been good. The decrease as compared with previous years is not so large as in the iron-ore trade where the loss is fully 40 per cent. as compared with 1913, and 30 per cent. over a period of three years. The coal traffic of 1914 will probably average 100 per cent. as compared with the average over the last five years, and this indicates a healthy situation.

The largest change in the bituminous business was in the tonnage coming from the West Virginia fields. The Ohio No. 8 field, which usually ships about five million tons in the Lake trade, has not moved a single pound of coal this season, the mines having been closed since Apr. 1. Cambridge operators began shipping in the middle of the season and have sent their last cargo up the Lakes. The Hocking district did not begin to move coal until late in the season and will fall substantially below its standard of 1,500,000 tons of lake coal. West Virginia fuels have made up the loss.

How much of the Northwestern trade will return to Ohio mines another year is the important question just now. The West Virginia operators have introduced their coals into many places that have never before been willing to consider them; it was an opportunity that they fully appreciated, and when the salesmen go out for 1915 business, a battle will be fought to hold a major portion of the new trade.

Considering the large stocks carried over on the Upper Lake docks, the 1914 business has been extremely good. The winter of 1913-1914 was open and the consumption of coal in the Northwest was comparatively light. Shipments the first two months of the Lake season were not so heavy as usual; in some instances, docks did not want any new coal until July 1, but when shipping was finally resumed, the traffic was steady.

There was no car shortage and vessels were always more plentiful than cargoes. However, so much coal was put on the Upper Lake docks during the summer months that when Nov. 1 came, there was practically a full supply. An open fall made it unnecessary to ship heavily in the last month of the season and extra freight for the last trip and storage in vessels were not required.

Anthracite shipments have been quite in proportion to the bituminous. The decrease in lake traffic was a little larger up to Nov. 1 than in bituminous, but the

hard-coal companies continued to ship heavily in November and will have as much coal at the head of the Lakes by the close of navigation as usual.

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Absurd Reports of Increased Coke Production

About once in so often the daily newspaper reporters become seized with an apparently irresistible impulse to make the wheels go round. Since the biennial election of Nov. 3, which perhaps furnished the psychological moment, the daily papers have been full of alleged news of plant resummptions. In many cases the reader might readily be deceived, although without being acquainted in detail with the industries involved, he should perceive that with general business in its present prostrated condition, no rapid resumption in activity, such as suggested by these reports, could possibly occur.

Among recent reports have been many purporting to give news of resummptions in the Connellsville coke region. The coke trade is so aligned that such statements appear particularly ludicrous. One report is to the effect that 21,000 ovens are going in blast in the coke regions. This is 55 per cent. of the total number in the region, and represents approximately the entire number idle. As a matter of fact, several thousand ovens are at plants where the coal has been so nearly worked out that the ovens could not operate unless they were to use coal that had been shipped to them.

Coke is not stocked to any extent. It suffers from re-handling and from the weather, and there is never any material excess of production over consumption. Substantially the entire output of the Connellsville region is consumed in the iron industry, and the production cannot and will not be increased until the iron industry revives. Up to the present moment the production of pig iron has been declining. There may be prospects of a slight increase in pig-iron production in the near future, but there has been none to date, consequently no increase in the demand for coke, and certainly no increase in the production. The reports of coke ovens resuming are pure fabrications.

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The Ohio Situation

It has been said that the Ohio miners on strike are anxious for a settlement, and only desire that the officials of the Union will let them vote on the subject so that they can exhibit that sentiment to their leaders. But the news from Coshocton is, to say the least, disturbing.

The price offered by the operators was 54.6c. per ton for machine-mined run-of-mine coal, 4c. of which compensation was for the pushing of loaded cars from the working face. That is a much better price than 47c., the magic figure for which they have been loudly calling in eastern Ohio. The trimmings of the banquet were as good as the main *pièce de resistance*, for turn either to right or left the operator in the proposed contract was required to pay for extras.

Though the scale committee approved of the arrangement, the men in a referendum refused it. The patience of the public with the Ohio resistance is stretched almost to the breaking point. Those whom the gods would destroy, they first make mad.

Sociological Department

The Y. M. C. A. Building at Ramage, W. Va.

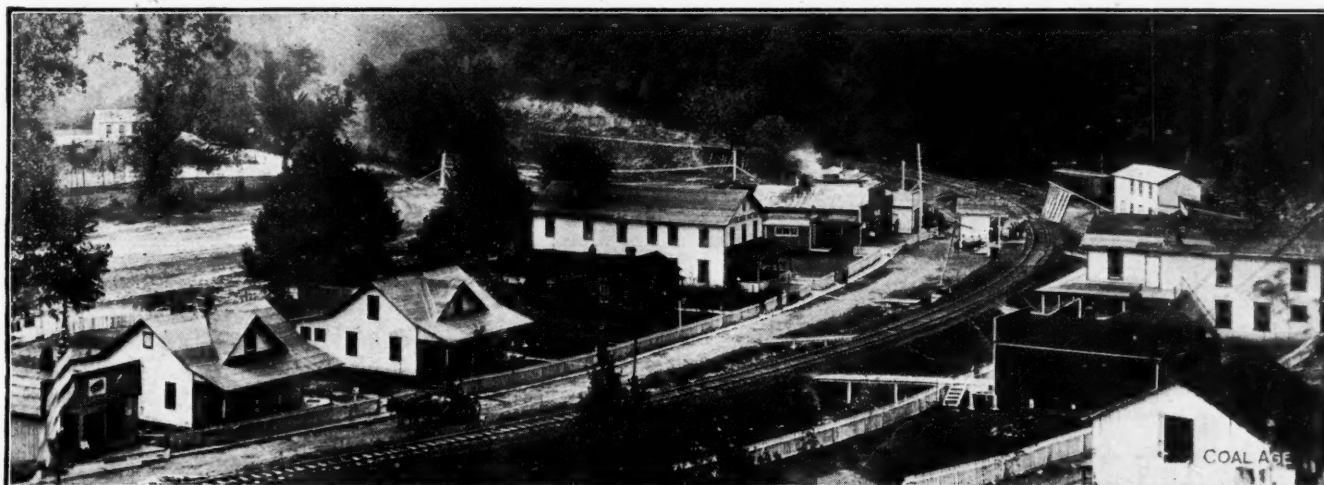
Ramage is a mining village in Boone Co., W. Va., 53 miles southwest of Charleston, on the Coal River R.R. and on the banks of Little Coal Creek. Recently, it dedicated a Young Men's Christian Association Building and this is fully expected to be a success because the sentiment back of the movement has already ripened.

The endeavors of the Y. M. C. A. in Ramage were *not*, however, a success at the very first. The Association had to meet at the start the conservatism and suspicion which everybody, miners and mountaineers especially, have for something new. This questioning or doubt is not really a fault. Far from it; if there were no disposition to turn over every new departure and weigh it carefully, the miner and mountaineer and the general public would

Whenever the mines were idle, time hung heavily on the hands of the men and they seemed to scent trouble when there was none. As a result when they went to work they were listless and discontented and disposed to exert themselves as little as possible. When any man was discharged because he was not industrious and neglected his manifest duty, the rest became affronted and in violation of their scale agreement went on strike.

THE NEED FOR AMUSEMENT

As F. F. Taggart, the secretary and treasurer of the Spruce River Coal Co., the company operating at Ramage, has stated he found the men were desirous of some mild form of excitement. One day the mine was rendered idle, all the men leaving for a town ten miles away. Investigation showed there was some kind of traveling circus billed for that day. At another time a quack doctor



THE VILLAGE OF RAMAGE, BOONE COUNTY, W. VA.

doubtless often be misled and beguiled. However, the average generous-hearted benefactor wonders why it is that his purposes are questioned when he knows himself that his intentions are above scrutiny. He cannot understand that others have no speedier way of determining the integrity of his aims.

THE EARLY CONDITIONS AT RAMAGE

There has been a large amount of dissatisfaction among the miners of West Virginia; a sentiment of resistance has been carefully fostered by agitators and the strikes along Cabin Creek and Paint Creek have continually borne fruit in other districts though without creating violence such as the villages on those streams experienced.

The money earned was quite generally spent in drunkenness, and conditions in Ramage were disgraceful every pay day. The violence during these debauches caused arrests and suits and then quarrels between families, and thus involved men who had personally no grievance and were guilty of no offense.

with an interesting tongue and some sort of an instrument drew the miners about three miles to enjoy his vaudeville acts and listen to his story. It was then that the Spruce River people realized that amusement was needed.

The company at first proposed to do what they have since done, erect a building. The important thing is not to build anything but to create a sentiment and they gradually realized this. After all it is often a harder task to mold sentiment than to erect a hall, and not a few may prepare the equipment and yet have no degree of success. Here, say the miners, is a new company development, earning perhaps a slight income, doubtless intended eventually to earn a big income, and every employee is ready to shun it, feeling that he is successfully thwarting an unholy purpose.

It was Ira D. Shaw, international secretary of the Y. M. C. A., who was asked to come to Ramage to see what could be done. Mr. Shaw was not successful in his project; he did not succeed in getting the men interested.

They had their suspicions and so the matter was temporarily abandoned. A second effort made by Mr. Shaw was more successful and the work was started.

THE SENTIMENT OF THE MINERS

But after the foundations were built and erection began, there was more curiosity than real interest evinced in the construction of the building. In fact, it seemed to concern the people very little whether the hall was ever completed or not. Looking over the problem, it was seen that the building was an unimportant matter after all in comparison with the man who would conduct the work. Weeks were spent trying to obtain the right man for the job, one who had a good character, experience in Y. M. C. A. work, and an ability to deal with such men as the company employed. At last, C. W. Ridenour was secured and he took charge on Apr. 1 of this year.

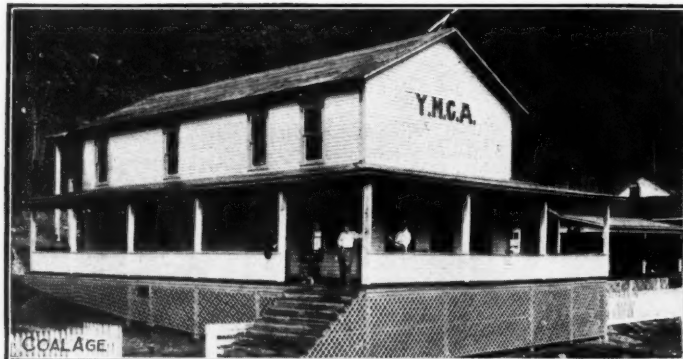
The first 60 days were wholly spent in the completing and arranging of the building and in getting acquainted with the employees. No attempt was made to organize a Y. M. C. A. The association secretary en-

free moving-picture shows and the auditorium was always crowded. On Sunday night illustrated lectures with Biblical subjects were delivered.

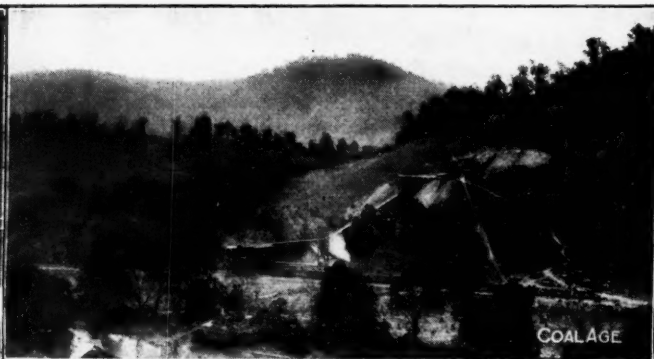
From that time on, the Y. M. C. A. work grew so rapidly as to astonish those who had instituted it. A Sunday school was organized with Bible classes. Literary organizations followed and in less than ninety days the employees were coming to the building and spending their evenings there every night in the week but Monday.

DESIRABLE CITIZENS MOVE IN AND THE DRUNKARDS LEAVE

It was gratifying to the mine management to find that there was always a waiting list at the mines as the result of their efforts to make things pleasant for their employees. Previously the men were always leaving and going to other mines. Perhaps too many mine officials look for a verbal appreciation of their efforts, and desire their employees to say how much they are pleased with the efforts of the company. The best of men are not built in that way. They may say it to their families and friends



A CLOSER VIEW OF THE BUILDING



RAMAGE COLLIERY OF SPRUCE RIVER COAL CO.

deavored to study conditions and to find out the difficulties with which he would have to contend.

DESCRIPTION OF THE ASSOCIATION BUILDING

The building has two stories and a basement and measures 32x70 ft. A porch extends along one side and in front of the building and halfway down the opposite side. The width of this porch with its ample length makes it large enough to accommodate all the people of the village when the warmth of the summer enables them to congregate on it. In the basement are shower baths and locker rooms, a motor and a pump for a deep well which pumps water to a tank on the hill. This tank supplies the town with water.

On the first floor are the general reading room, pool-rooms, and in one corner a barber's chair, writing and checker tables and a large fireplace. Soft drinks and ice cream are also served here at a standard soda-water fountain.

The second floor has a general assembly hall, equipped with a moving-picture machine, platform, comfortable chairs and a piano. The floor is used for Sunday school work, lectures, miners' meetings and any good public cause. The building with its equipment cost close to \$6000.

THE BUILDING IS OPENED WITH FREE ENTERTAINMENT

The first two weeks the building was open, the community at large was entertained every other night with

but they will hesitate a long time before they will express it to those who have materially benefited them. The best evidence of success is in the retention of the employees, in their participation in the benefits and in the anxiety of those not employed to obtain jobs and to profit by the change in location.

Strange to say not only did Ramage retain its desirable men and obtain more but it concurrently got rid of the drunkards, who moved out for other towns as if the new habits of the citizens made the village uncongenial to them.

THE EMPLOYEES HAVE FULL CHARGE

The association was not organized till work was well under way. The board of directors was composed of the men employed at the mine and none of the company and none of its officers have anything to do with the association or serve in any capacity.

The Y. M. C. A. organized a strong baseball team and six acres of the company's property were turned over to it for an amusement park. This park was inclosed by the men who worked in the mines. A fee of 10c. is now charged for admission to the moving-picture show, children being allowed to enter for half price. Five cents is charged for shower baths. This entitles each person to an individual cake of soap and a large towel. Admission to baseball games costs 10 and 15c.; pool tables 5c., while ice cream and soft drinks are sold for 5c. each. The whole

revenue goes to the treasury of the association and further development work.

SOME ACCOUNT OF THE VILLAGE

A hospital is now planned, open to any of the families of the employees and a nurse will be engaged to give her whole service to this work. The houses are all comfortable four-roomed cottages with porches in front and a large space for gardens and front yard. The company has planted hundreds of trees all through the town, laid out flower beds and given away flower and vegetable seeds. Next year contests with prizes for the best gardens and lawns will be given.

The town of Ramage has two good schools with excellent teachers. The best of water is secured from driven wells and as sanitation is diligently taught and the yards are kept clean, the town is a model from a hygienic standpoint. In fact the people seem pleased to have their homes inspected.



THE RAMAGE Y. M. C. A. HEADQUARTERS

The social feeling in the town is one of the leading virtues of the new work. The men and their wives are interested in the newcomers and desire just as ardently as the company officials that good citizens shall enter the community. They have no use for lazy, good-for-nothing men or drunkards. It is hard to estimate how much this means in promoting efficiency.

The Y. M. C. A. is more than earning running expenses. It is gathering in money for improvements which will be made as time passes.

DEDICATION OF BUILDING

The dedication took place Oct. 10, 1914. I. M. Taggart, the president of the Spruce River Coal Co., made the address of welcome. The governor of West Virginia, H. D. Hatfield, and the former president of the United Mine Workers of America, Thomas L. Lewis, delivered the principal addresses.

The following words from the speech of the latter are well worthy of consideration outside of Ramage as well as in that village:

There has always been more difficulty in getting employees and employer together for the purpose of discussing a difference than there ever was in finally settling it. Neither of the parties in a controversy can approach a problem in an intelligent manner if they have been denouncing or endeavoring to take an unfair advantage of one another.

The Spruce River Coal Co., of Massillon, Ohio, has realized this element in management and the officers are generously ready to express their indebtedness to the Y. M. C. A. for satisfactorily solving the problem for them. Mr. Taggart, the president, recently stated in a letter which we have seen:

The result of the small amount of money which has been expended is almost beyond our belief. I am advised that the National Young Men's Christian Association is putting forth a special campaign throughout the mining districts for this particular welfare work and it should receive the endorsement of the public and the press, as it certainly brings results.

It is to be hoped that not only at Ramage and Decota but all through the State of West Virginia, the good work may spread.

Recent Legal Decisions

Duty to Warn Employee Against Danger—It was the duty of a company which operated an overhead coal conveyor to warn an inexperienced employee, who was directed to oil the shaft of the conveyor, against the danger of his clothing catching on a revolving setscrew projecting from a safety collar, which was covered by dust and could not be seen when the machinery was in motion, and, having failed to perform this duty, the company is liable to the employee for injury resulting. (Halpin vs. National Safe Deposit Co., 184 Illinois Appellate Court Reports 13.)

Discrimination in Freight Rates on Intrastate Shipments—A shipment of coal from one point to another within a single state is intrastate in its character, as affecting the shipper's right to recover on account of discrimination against him in the matter of freight rates, although he intends to later re-ship the freight from the state. The fact that a shipper pays a discriminatory rate, knowing that other shippers are being given unlawful rebates, does not preclude him from subsequently recovering damages on account of the discrimination. (Pennsylvania Supreme Court, Mitchell Coal & Coke Co. vs. Pennsylvania Railroad Co., 88 "Atlantic Reporter," 743.)

Seller's Liability for Increased Freight Charges—Duration of Coal Sales Contracts—Under a contract to sell coal f.o.b. the selling coal company's mines, the company is liable for increased freight charges arising from a shipment from a more distant mine owned by a third party. Where a contract bound a coal company to supply fuel required by a brick company during "the remainder of the brick-making season, say from this date to Apr. 1, 1910," at a given price, the brick company was not entitled to require delivery after Apr. 1. "In interpreting the contract, the real intention of the parties must be allowed to control; but, if the contract is unambiguous, such intention must be gathered from its language. . . . The giving of Apr. 1 as the date of the termination of the contract was not a mere approximation of the time it should end, but an absolute limit, beyond which it could not extend; so, in our opinion, the contract did not require appellant to furnish appellee any coal after that date, although the brick-making season may not, in fact, then have ended." (Kentucky Court of Appeals, Nelson Creek Coal Co. vs. West Point Brick & Lumber Co., 152 Southwestern Reporter, 929.)

Legal Aspects of Labor Organizations—The decisions of the United States Circuit Court of Appeals for the Fourth Circuit, which were handed down in the cases of Mitchell vs. Hitchman Coal & Coke Co., and Bittner vs. West Virginia-Pittsburgh Coal Co., 214 Federal Reporter, 685, 716, establish the following principles of law relative to mine unions: A union organized for the betterment of the interests of its members may order a strike, and induce other employees, by peaceable means, to join the strike; being subject to restraint by injunction only when unlawful means are resorted to. When a combination of employees amounts to a violation of the Sherman Anti-Trust law, a mining company injured thereby is not entitled to maintain suit to enjoin continuance of the combination; the company's only remedy is a suit for treble damages resulting from the unlawful combination. The federal government is the only party that can maintain an injunction suit of this kind. When a mining company employs nonunion men under an agreement that if they join a union, the contract of employment may be terminated by the company, efforts made by members of a miners' union to persuade such men to join the union, without coercion or intimidation, does not constitute an actionable interference with the contract of employment. Injunction lies, however, to restrain the members from coercing or intimidating employees who decline to join the union.

Discussion By Readers

Mining Laws, Legislation and Mine Regulations

Letter No. 6—There are two provisions that might well be included in the mine laws of coal-mining states and that would, I believe, result in a direct benefit to the industry as a whole. They are as follows:

First, a definite *educational training* should be required as a prerequisite to a candidate's taking the examination for mine foreman or fireboss. This requirement might be met in different ways. In many states, the law provides that no boy under 16 years of age can be employed in a mine. In that case, applicants for examination for certificates of competency should be required to produce evidence that they had attended school up to the age of sixteen.

Should, however, this early training have been neglected, in the case of any candidate who had been compelled to leave school before reaching that age, such a one might be permitted to offer, instead, a period of attendance at night school, or of study under a competent teacher, or the completion of a certain amount of correspondence-school work.

It seems self-evident that a requirement of this nature would result not only in the applicants being better prepared for the examination, but would provide or pave the way for the more efficient and intelligent operation of mines.

Second, there should be some recognition, in the mining laws, of *technical training* as a partial substitute for practical experience. This suggestion is made in behalf of the graduate mining engineer who has spent from four to six years in the study of mining engineering and, having secured his degree of Engineer of Mines, determines to work his way up and familiarize himself thoroughly with the practical operation of a mine. As evidence of his practical knowledge of mining, he desires to obtain a certificate of competency to act either as fireboss or mine foreman.

Under the bituminous mine law of Pennsylvania (1911), a candidate must serve five years before he is eligible to take the examination. During this time he must work for smaller wages than are commensurate with the time and money devoted to obtaining his education. It should be recognized, in the mine law, that such a candidate, by reason of his technical training, is undoubtedly better fitted after, say two or three years of service in the mines, than the man with less education but more practical experience.

Briefly, my suggestion is that a candidate for an examination, holding the degree of Engineer of Mines, should be credited with one year of service in the mines for each two years of college work. If he has had four years in college, he would then be required to serve three years in the mines; and if he has had six years in college, he would only be required to work two years in the mines, before being eligible for examination for a certificate of competency.

Compare, for instance, two young men at the age of 18, starting to prepare themselves for mining work. The one enters the mine at once and, after five years' work, becomes eligible for examination for a certificate of competency. During that time the other man has spent four years in college, obtained his degree of Engineer of Mines, and has had one year of practical work in the mines. Who will say that this man should work four years longer before he is eligible for examination? Should not his technical knowledge and training reduce this period of practical service in the mine and fit him earlier for the examination?

The five years of practical work required, by law in Pennsylvania, is a particular hardship to the college man. In many cases, he has been compelled to work his way through college and often graduates in debt for money that he has had to borrow in order to finish his education. For this reason, again, few of these men can afford to enter the mines as laborers or miners for five years of service, but must seek more remunerative employment that will enable them to pay off their indebtedness. While a three-year term of practical service in the mine would attract many, it goes without saying that a five-year term of such service practically debars from the examination all but those who have means and are independent.

As an illustration, permit me to cite a case that came under my observation. Ten years ago a young lad, after driving a mule for a year in one of the Pennsylvania collieries, decided that he could best improve himself by getting an education. He returned to school and worked his way through college, but found, after graduation, that it would be impossible for him to support himself and meet his indebtedness, while gaining the five years' practical experience in the mine, required to make him eligible for examination under the mining law. Thus debarred from the mines, he went West in the employ of a metal-mining company where his ultimate opportunities were no better, if as good, than those presented in coal mining. The period of service required, before he could secure a paying position, however, was much shorter and made it possible for him to meet his engagements.

In closing, permit me to say that coal mining is bound to be safer and more efficient if it attracts young men with technical training into the operating department. I believe the suggestion made of allowing *two years of college work to count for one year of practical service in the mine* would unquestionably result in gaining many desirable men who now feel that they cannot tide over the five years of practical work at relatively low pay.

M. D. COOPER, Mining Engineer,
Ellsworth Collieries Co.

Ellsworth, Penn.

Letter No. 7—I notice, in the inquiry of James T. Reynolds, fireboss, COAL AGE, Oct. 3, p. 563, which appears under the title, "A Gaseous Mine," he raises the question of perspicuity in the statement of the Pennsylvania bituminous mine law, where the attempt is made to

define what constitutes a gaseous mine in Pennsylvania.

I have referred to the sections of the bituminous law to which Mr. Reynolds draws attention, and agree with him that the meaning of the law relating to a gaseous mine is vague and indefinite. The law does not give a clear and satisfactory definition of such a mine; but, to a certain extent, leaves the matter somewhat in doubt. In regard to Art. 28, Sec. 3, which reads: "The provisions of this act shall not apply to any mine employing less than 10 persons inside the mine, in any one period of 24 hr.," I fail to understand what the number of men working in a mine has to do with its being *gaseous* or *nongaseous*.

A mine generating explosive gas in such quantities that it can be detected by a modern safety lamp is, without question, a gaseous mine. This is true regardless of whether the number of men working on the inside is less or more than ten. The fact that the mine is liberating gas in such quantities that it is readily detected on the lamp *makes* the mine a gaseous mine, whether it be large or small and employing many or few men.

Like the bituminous statute of Pennsylvania, the mine laws of Tennessee do not clearly and satisfactorily define a gaseous mine; but leave this question in doubt. It is not stated anywhere in the Tennessee law what sort of a mine constitutes a gaseous mine. As a consequence, the duty of classifying such mines, in Tennessee, has devolved on the chief mine inspector, who has used his best judgment in so doing.

The Tennessee law, Sec. 9, Chap. 237, 1903, provides for four classes of coal mines, designated as A, B, C and D. The duty thus devolves on the chief mine inspector to list the mines of the state as belonging to one or another of these classes. In this classification, the greatest difficulty is experienced in respect to "Class A" mines, which by law "shall include every coal mine or other mine known to liberate firedamp (CH_4) at present or in the future, and all mines of this class shall be inspected . . . at least once every 60 days." Besides this requirement of frequent inspection, Class A mines must be supplied with at least 150 cu.ft. of air per min., for each person, and 600 cu.ft. of air per min., for each animal employed in the mine at one time. In Class B mines there is required but 100 cu.ft. per min., and in Class C mines, 85 cu.ft. per min. for each person underground, while these mines require only 500 cu.ft. per min. for each animal employed.

It is easy to see, from the indefinite wording of the law, that it is an exceedingly difficult matter to draw the line of distinction, in respect to Class A mines, which are subject, by reason of such classification, to rigid restrictions. The law simply states that mines known to liberate firedamp (CH_4), at present or in the future, shall belong to this class. The question naturally arises, How much gas must a mine liberate before it can be claimed that it rightly belongs to Class A. This feature of the law throws an unnecessary burden on the mine inspector. In this regard, there is need for a clearer definition of the legal requirements. I will say, in closing, that all mining statutes should be so amended as to make their meaning clear and conclusive and leave no doubt as to the proper classification of the mines in the state.

JOHN ROSE,
District Mine Inspector.

Dayton, Tenn.

Problems in Rescue Apparatus

Letter No. 4—In reply to the criticism of W. H. Moore, COAL AGE, Sept. 19, p. 477, I beg you will permit me to present the following statement from the eminent physiologist in England, to whom I referred in my previous letter, COAL AGE, Aug. 22, p. 314.

In response to my request, this eminent authority sends me the following, in respect to the relative volumes of carbon dioxide exhaled and of oxygen inhaled, under different conditions of activity.

"On an ordinary mixed diet, for every four volumes of carbon dioxide breathed out, five volumes of oxygen are breathed in. In other words, one-fifth of the oxygen breathed is utilized in the oxidation of hydrogen to water; and four-fifths, in the oxidation of carbon to carbon dioxide.

"The water so formed may leave the body as sweat, urine or exhaled vapor. The water that is given off, to the breathing apparatus, from the exhaled air, is therefore almost entirely derived from water that has been drunk. Most of the oxygen inhaled at each breath is, of course, exhaled again into the breathing bag.

"Resting, a man requires about 250 c.c. of oxygen per minute, but when exercising hard, from eight to ten times this amount. He will thus use up the whole of his supply of 120 liters per hour when working hard, and be obliged to waste, through the escape valve, the larger part of it when resting."

H. N. ELMER, Sales Agent,
Siebe, Gorman & Co., Ltd.

Chicago, Ill.

The Ohio Situation

Letter No. 3—In my letter on the Ohio Situation, COAL AGE, Oct. 3, p. 561, I claimed that the eastern Ohio miners should receive the 47c. rate they were asking, because of the fact that the Hocking Valley miners sacrificed $2\frac{1}{2}$ c. per ton for the benefit of their brothers in the eastern part of the state. I made the assertion that "Equal labor demands equal compensation."

In the issue of COAL AGE, Oct. 17, p. 637, an editorial entitled "Small Potatoes," takes exception to what it styles my "moral maxim." Against this so called maxim, the writer of the editorial arrays "a stern economic truth," which he pronounces as follows:

Wherever products are competitive and enter the market on equal terms, equal labor can demand equal compensation only when the products of equal labor are themselves equal.

This dictum is then illustrated by a supposed colloquy between a miner's wife and a farmer, whom I shall call "Brown." Brown is trying to sell potatoes to the miner's wife, who refuses to buy on the ground that Brown's potatoes are not as large as Thompson's, while the price asked is the same. To this Brown replies that he has worked as hard as Thompson, in growing the potatoes. "But," said the miner's wife, "it's taters I'm buying and not your labor."

In my opinion, this is not a parallel case with that existing between the two Ohio districts. The Ohio miners are selling labor and not potatoes, or coal, or any other commodity. Suppose, for a moment, that Brown and Thompson find that they cannot do their farm work without help; and each hires a man to work on the farm.

Brown cannot say to his hired man, later, "These potatoes are smaller than Thompson's and I cannot afford to pay you as much as Thompson pays his man." To such reasoning, the man would reply, "It's my labor you are buying and not potatoes. I work as hard as Thompson's man. He is not overpaid and I am entitled to the same wage. Last year, when you had the best of Thompson, you paid no more for labor than he did; and, this year, it's up to you to pay as much. If you cannot raise potatoes equal to Thompson's, the only thing to do is to leave the potato market to him and raise corn."

The reasoning is economically sound. It is only another way of saying that *the economic law tends to prevent the production of an inferior article*. In other words, *the article produced must be of sufficient value to pay for the labor of production, at a living wage*. This is the same conclusion reached in the editorial, where it says, "There is every need that the economic law shall arrest the hand of the man who chooses to produce an inferior article at an excessive cost."

I must not be understood as saying that eastern Ohio mines must shut down. Instead, let them improve their methods. In this connection, permit me to quote from Letter No. 6 of Supt. J. D. Jones, writing on the Foreigner in Mining, COAL AGE, Oct. 17, p. 643. Mr. Jones asserts, "Competition in the coal industry will soon cause

efficient engineering to replace obsolete methods. . . . While trained men and improved methods are generally forging ahead, I know mining properties in eastern Ohio and elsewhere that have made no progress during the last 15 years. On these properties one cannot find a labor-saving device or a machine designed later than 1900. . . . Many coal-mine operators have been so engrossed in their sales department and other matters, that they have given no attention to the introduction of mining machines and other improvements."

Again, the editorial states:

The wage scale of Ohio has made the state backward in conservation, negligent of first-aid, indifferent as to housing, and largely unprogressive.

While this argument has merit, it is not as convincing in behalf of conservation, first-aid measures, good housing, etc., as the argument generally used, "It pays." Ohio's labor rate has always, I believe, compared favorably with that of other states in the same competitive district. Illinois, also, is admittedly progressive.

I believe that the writer of the editorial to which I have referred is sincere, and I have not written in the spirit of opposition, but with equal sincerity, being convinced of the justice of my claim that *equal labor demands equal compensation*.

GEO. N. LANTZ.

New Straitsville, Ohio.

Study Course in Coal Mining

BY J. T. BEARD

The Coal Age Pocket Book

A **Centrifugal or Turbine Pump** is a water turbine operated, by power, in a reverse direction. In a water turbine, the water imparts motion to the turbine wheel and power is developed; but, in a turbine pump, power is applied to turn the wheel or propeller, which imparts its motion to the water. The difference is the same as that between a windmill and a ventilating fan. The moving air turns the mill, while the fan operated by power moves the air.

A **piston pump** is one in which the cylinder is fitted with a piston, the area of the piston being equal to that of the cylinder.

A **plunger pump** is one in which the piston is replaced by a plunger that is moved in and out of the cylinder or pump barrel displacing the water therefrom each alternate stroke. A plunger, unlike a piston, is of necessity single-acting; except where the plunger is inside-packed, or the same plunger operates between two water cylinders. A piston pump may be either single- or double-acting, according to the arrangement of the valves that control the inflow and discharge of the water.

The terms **outside-packed** and **inside-packed** in reference to pumps refer to the manner of packing the plunger. A piston pump is necessarily always inside-packed. A plunger, however, may be either outside- or inside-packed. (See figure on the following page.)

An **air pump** is a pump used to exhaust air from a receiver or other chamber or vessel. A machine used to compress air is called an air compressor.

A **boiler-feed pump** or simply **feed-pump** is a small pump used to force the feed-water into a boiler.

A **sinking pump** is a pump used in sinking shafts. A special design of this class of pumps is adapted to hang in a shaft, so that it can be readily raised or lowered as occasion may require.

RECIPROCATING PUMPS

The essential parts of all reciprocating pumps are the pump cylinder or barrel, piston or follower, plunger, piston rod, valves, packing rings and packing, to which may properly be added the air chamber, which is an important adjunct of all high-duty pumps.

The cylinder of a piston pump is similar to that of the steam engine; but the pump barrel of a plunger pump may be of any reasonable size and shape.

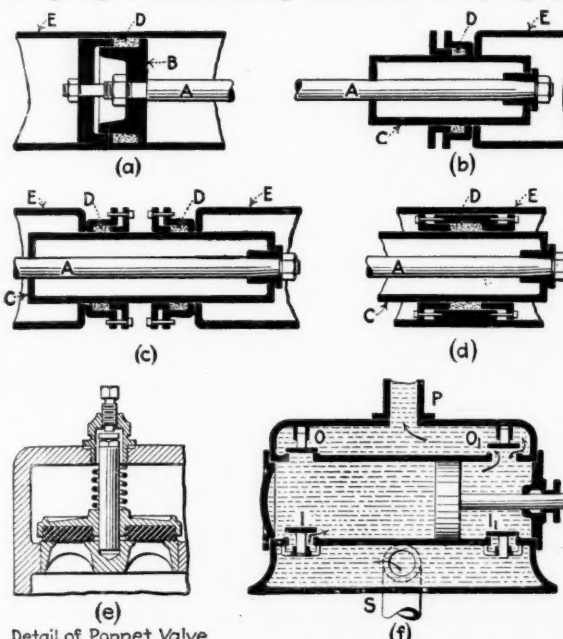
The piston or "follower" is a more or less solid disk attached firmly to the piston rod. Its circumference is grooved deeply to receive the packing or packing rings, as shown at (a) on the following page.

The plunger may be outside-packed, single-acting, as shown at (b); outside, center-packed double-acting (c); or inside-packed, which is also double-acting (d).

The piston rod of a direct-acting pump connects the steam piston of the pump with the water piston or plunger, so as to form a single, compact system. In some cases, the steam and water-ends have separate piston rods, which are connected, by siderods, into a rigid system.

The Coal Age Pocket Book

The accompanying figures illustrate the more important details of piston and plunger pumps, in regard to construction of piston (a); outside, end-packed plunger, single-acting (b); outside, center-packed plunger, double-acting (c); inside-packed plunger, double-acting (d); form of spring poppet valve (e); diagrammatic arrangement of the suction (I, I₁) and discharge (O, O₁) valves in a piston pump (f). The outside, center-packed plunger is here shown as operated by the piston rod A, which will require to be end-packed in one cylinder.



Detail of Poppet Valve

A=Piston Rod, B=Piston in two parts, C=Plunger, D=Packing, E=Cylinder or Pump Barrel, I, I₁=Intake or Suction Valves, O, O₁=Outlet or Discharge Valves, P=Discharge Pipe, S=Suction Pipe

COAL # 3E

Inquiries of General Interest

Resistance Required to Reduce Speed of Electric Motor

I want to ask if you will kindly answer the following question in COAL AGE:

How can I calculate the size and length of wire required to build a wall resistance sufficient to reduce the speed one-half, in operating a 15-hp., 250-volt, General Electric motor, using a current of 54.7 amp. when running at a speed of 600 r.p.m.?

An answer to this question will greatly oblige one of your subscribers and an interested reader.

Every day electric motors are becoming of increased importance in coal mining. The use of such motors underground possesses many advantages that appeal to mine superintendents and foremen, owing to the ease with which they can be installed and moved from place to place as occasion may demand. The installation of an electric motor will, of course, depend on the absence of gas in the mine.

MECHANIC.

Red Jacket, W. Va.

In order to obtain the best possible answer to this question, it was submitted to an engineer of one of the large electric companies, who is familiar with the installation and operation of this class of motors. His reply is as follows:

"With the same field strength as at 600 r.p.m. and with full-load torque on the shaft; that is to say, with the same current input of 54.7 amp. delivered to the armature, it will require about 52 per cent. normal volts impressed on the armature to give a speed of 300 r.p.m. This will leave $100 - 52 = 48$ per cent. of the voltage to be absorbed by the external resistance, which gives $0.48 \times 250 = 120$ volts. Then for a current of 54.7 amp., the required resistance, according to Ohm's law, will be

$$R = \frac{\text{volts}}{\text{amp.}} = \frac{120}{54.7} = 2.2 \text{ ohms}$$

"Reference must now be made to the wire tables given in any standard handbook for electrical engineers. From these tables it will be found cumbersome to use most any form of resistor wire alone for this external resistance of 2.2 ohms. With either german silver or iron wire, which are the most readily obtainable, there would be required for this resistance at least 500 ft. of wire of the proper current-carrying capacity, with the maximum allowable temperature rise.

"There is, however, an alternative if rapidly flowing water is available. By submerging the resistance coil in a stream of water, the heat developed by the resistance in the wire is carried off and the overheating of the coil prevented. Adopting this method, it is found that 30 ft. of No. 18 B. & S. iron wire wound in the form of a coil and submerged in running water, as described, will carry a full-load current without overheating. I would suggest that iron grids, built especially for this purpose, be pur-

chased from the company that supplied the motor. This would, without doubt, be the most satisfactory solution of the problem."

ELECTRICAL ENGINEER.

New York City.

Drying Washed Coal

I would like to ask of COAL AGE and its many practical readers any information they can give in regard to the drying of washed coal. What I desire particularly to know is whether a soft bituminous coal can be successfully washed and then dried so that it will contain only 3 per cent. of moisture. Information in regard to the successful installation and operation of such a drying process, together with data relating to the additional cost in the production of the coal, will be greatly appreciated.

JOHN HAMMOND, Mine Foreman,
Wharton Coal & Coke Co.

Coral, Penn.

The question of drying coal as it comes from the washery is not a new one. It was suggested, some time ago, in connection with the work of washing the coal. Such a drying process has been tried in a number of instances; but with what results, we cannot state.

The drying of the coal, in respect to the advantages to be derived thereby, can be viewed in two aspects. First, the extraction of the surplus water from the washed coal reduces, to that extent, the cost of transportation of the coal to market. Though the percentage of reduction is comparatively slight, the saving in freight charges on, say 1000 tons of coal per day, may prove an item not to be disregarded.

Second, the shipment of comparatively dry coal may and often does result in a shrinkage in the weight paid for mining, and cause a difference between the mine sheets and the railroad weights that would be serious. Again, the drying process would probably start an early disintegration of the coal, which would greatly increase the loss by breakage, in handling. It has been suggested that the drying of the wet coal may greatly assist the oxidation of the sulphur contained in the coal and, in this respect, prove a decided advantage by improving the quality of the fuel. These comparative advantages and disadvantages must be considered when estimating the additional cost.

A reference was made, some time since, COAL AGE, Vol. 3, p. 880, to a centrifugal drier, which was designed and placed on the market by the American Concentrator Co. (Ohio). It was claimed, at that time, that this machine could handle 50 tons of washed coal per hour, containing 13 per cent. of water and, by its operation, reduce this content to 5 per cent. The principle of the machine depended on the surplus water of the coal being thrown out by the centrifugal force developed by the rapid revolution of the coal in the machine.

We hope that further information in regard to this interesting subject will be forthcoming.

Examination Questions

Miscellaneous Questions

(Answered by Request)

Ques.—If 30,000 cu.ft. of air is passing in a square airway with a velocity of 500 ft. per min., what is the length of each side of the airway?

Ans.—Assuming this is an average velocity of the air current, the sectional area of the airway is

$$a = \frac{q}{v} = \frac{30,000}{500} = 60 \text{ sq.ft.}$$

The length of any side of a square airway of this section is $\sqrt{60} = 7.75$ ft., or 7 ft. 9 in.

Ques.—If the weight of a cubic foot of air is 0.0766 lb., and the water gage is 1.5 in., what is the height of the motive column?

Ans.—The pressure corresponding to a 1.5-in. water gage is $1.5 \times 5.2 = 7.8$ lb. per sq.ft. The corresponding motive column basing the calculation on the given weight of air is then $7.8 \div 0.0766 = 101.8$ ft.

Ques.—Explain the symbols, CH_4 , CO_2 , SH_2 . What are their comparative weights?

Ans.—The symbol CH_4 is the chemical symbol representing a molecule of methane or marsh gas, whose molecular weight is $12 + 4 \times 1 = 16$. The symbol CO_2 is the chemical symbol for carbon dioxide, and its molecular weight is $12 + 2 \times 16 = 44$. The symbol SH_2 , which is more commonly written H_2S , is the chemical symbol for hydrogen sulphide, and its molecular weight is $2 \times 1 + 32 = 34$. The densities of these gases referred to hydrogen as unity are 8, 22 and 17, respectively; the density of a gas referred to hydrogen being one-half its molecular weight.

Ques.—The portal to one of our mines is a concrete arch, at which the air is measured. The arch is 10 ft. high, 8 ft. to the springing line and 8 ft. wide; what are the perimeter and area of this intake?

Ans.—The perimeter of the intake is made up of the width of the floor, 8 ft.; the two vertical sides, to the springing line of the arch, each 8 ft.; and the circumference of the arch. The distance from the floor to the springing line of the arch being 8 ft., and the height of the arch 10 ft., the arch is an ellipse whose major axis is the width of the arch, 8 ft., and the minor axis, $2(10 - 8) = 4$ ft. The perimeter of a semiellipse is 3.1416 times one-fourth the sum of the two axes; or, in this case, $3.1416(4 + 8) \div 4 = 9.42$ ft. The total perimeter of the arched airway is, therefore, $9.42 + 3 \times 8 = 33.42$ ft.

The sectional area of the intake is made up of the area of the semiellipse, plus the area of the square below the arch. The area of the semiellipse is 0.7854 times one-half the product of the two diameters; or, in this case, $0.7854(4 \times 8) \div 2 = 12.57$ sq.ft. The total area of the cross-section of this intake is therefore $12.57 + 8 \times 8 = 76.57$ sq.ft.

Ques.—If there are 10,000 cu.ft. of air passing through a mine, in one current, and the resistance of the two shafts at that time is equal to the resistance of the mine;

what quantity of air will pass through the mine if another airway be added of the same size and length as the first airway, the power on the air remaining the same? Assume that each shaft is 6x6 ft. in section, and 500 ft. deep, and that they are connected at the bottom by an entry 6x6 ft. in section, and 1000 ft. in length?

Ans.—First, find the reciprocal of the cube of the relative power potentials of the shafts and entries, which are calculated as follows:

$$\text{Two shafts, } \frac{1}{X^3 u} = \frac{10}{a^3} = \frac{1000 \times 24}{36^3} = 0.5144$$

$$\text{One entry, } \frac{1}{X^3 u} = \frac{1000 \times 24}{36^3} = 0.5144$$

$$\text{Two entries, } \frac{1}{X^3 u} = \frac{1000 \times 48}{72^3} = 0.1286$$

In tandem circulations where the air passes through consecutive sections, the sum of these values for each section in the circuit, will give the corresponding value for the entire circuit, from which the relative potential value for the circulation can then be found. In the present case, the calculation is as follows:

$$\text{Present circulation, } \frac{1}{X^3 u_1} = 2 \times 0.5144 = 1.0288$$

$$(\text{General potential}), X_{u_1} = \frac{1}{\sqrt[3]{1.0288}} = 0.9906$$

$$\text{Proposed circulation, } \frac{1}{X^3 u_2} = 0.5144 + 0.1286 = 0.643$$

$$(\text{General potential}), X_{u_2} = \frac{1}{\sqrt[3]{0.643}} = 1.159$$

Having found the general potentials of the original and the proposed arrangements, the quantity of air circulated by the same power in each case is proportional to the potential ratio, which gives

$$\frac{Q_2}{Q_1} = \frac{Q_2}{10,000} = \frac{1.159}{0.9906}$$

$$Q_2 = \frac{10,000 \times 1.159}{0.9906} = 11,700 \text{ cu.ft. per min.}$$

This is a difficult question for examination; but the work could be greatly shortened by canceling the common factors in the first potential values, which would give the following relative values:

$$\text{Two shafts, } 1/X^3 = 1$$

$$\text{One entry, } 1/X^3 = 1$$

$$\text{Two entries, } 1/X^3 = 1/4$$

$$\text{Present circulation, } 1/X^3 = 1 + 1 = 2; \text{ and } X_1 = \sqrt[3]{2}$$

$$\text{Proposed circulation, } 1/X^3 = 1 + 1/4 = 5/4; \text{ and } X_2 = \sqrt[3]{5/4}$$

$$\text{Potential ratio, } \frac{X_2}{X_1} = \sqrt[3]{\frac{4 \times 2}{5}} = \frac{2}{\sqrt[3]{5}}$$

$$\text{Finally, } Q_2 = \frac{10,000 \times 2}{\sqrt[3]{5}} = 11,700 \text{ cu.ft. per min.}$$

Book Review Department

COAL FIELD DIRECTORY AND MINING CATALOG OF COAL MINING EQUIPMENT FOR THE YEAR, 1914. 564 pp. 9½x12½ in. Keystone Consolidated Publishing Co., Inc., House Building, Pittsburgh, Penn. Cloth Boards.

"As uptodate as a telephone book and as concise as an encyclopedia" is the proud boast of the publishers and we must admit the claim has much merit. The early part of the book is full of advertisements of an extremely readable character with occasional technical matter which seems well chosen. The field has certainly been well canvassed and to a cursory examination the book seems remarkably complete.

The corporation has for several years been publishing a directory and therefore is well equipped for effective work. The ordinary directory of coal mines in fine type at the end of the book occupies 140 pages. To it is added an exceptionally valuable addition of 17 pages, cataloging mines by counties so that traveling-men and managers who wish to district their work will receive no little assistance in so doing.

The book reflects much credit on E. B. Day, whose ideas, we believe we are right in saying, it represents. There are many exceptionally good tables bound within its covers and we believe that many engineers and managers will find it serves as a text-book.

EXAMINATION OF LUBRICATING OILS. By Thomas B. Stillman, late professor of engineering chemistry, Stevens Institute of Technology. 120 pp., with 5-page index. 6x9 in. The Chemical Publishing Co., Easton, Penn. Cloth boards. Price, \$1.25.

The study of oils is hedged about by much secrecy. The greater part of the literature published tells us how particular we should be to get the right kind of oil, what will happen to our machinery if we are indifferent as to the quality, how important it is that we should employ an expert to select our oils, but on the subject itself there is a silence more profound if not as ominous as that regarding the military status of nations. It is a study in which everyone who uses oils is interested, but when he would post himself he finds a conspiracy of silence, or rather, much noise, with but little valuable fact.

The text book above mentioned supplies much needed information and gives several specifications for lubricating oils, also the results of many tests made by the author. It seems possible that eventually the public will realize that there are oils of various qualities—specific gravity, composition, viscosity and the like—which will serve certain purposes equally or almost equally well.

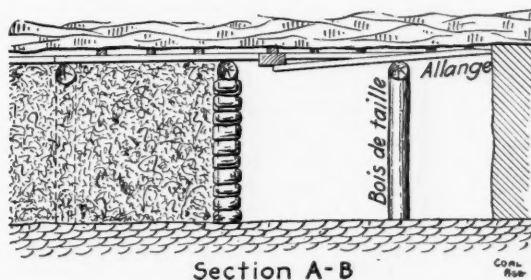
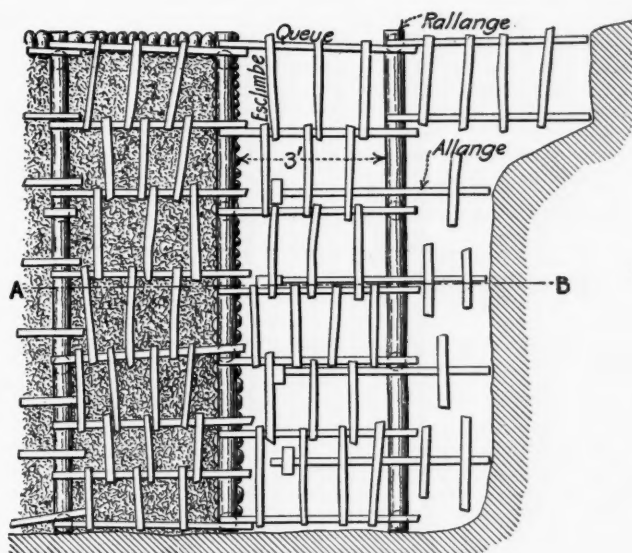
Consequently, the test that will be imposed will not be exclusively an examination of the oils as oils, but a trial of their lubricating qualities. The resistance of a journal revolving at a certain speed for a definite time will determine largely the excellence or the undesirability of oil. Chemists may demur at this test, but oil should be tested, like cement, by its performance. The Thurston, Henderson-Westhoven and Riehle machines make such determinations. Of course, where the service of the oil is discontinuous, and the fluid is exposed to alternate high and low temperatures, a steady test with such a machine would be an unfair criterion taken alone. Furthermore, no machine appears to have been manufactured to measure the lubricating qualities of oil when fed to steam and applied thereby to surfaces.

However, the author is not sponsor for these remarks. His description of all of the various tests seems rather favorable to the use of everyone of them, and probably all of them have their value; some because oil has not only to lubricate, but has also to be fed to the surface; others because oil has to be stored for long periods, and still others because it has to be used at different temperatures and is liable to explode and may, moreover, have a chemical action on surfaces which are exposed to its influence.

MODERN PRACTICE IN MINING, VOL. III, METHODS OF WORKING COAL. By R. A. S. Redmayne, chief inspector of mines of Great Britain. XII + 204 pp. with 6-page index. 5¼ x 8¼ in. 167 illus. and one folding plan. Longmans, Green & Co., 4th Ave. and 30th St., New York City. Cloth Boards. Price, \$2.

This book written by the chief inspector of mines of Great Britain fully sustains the reputation of the series. The numerous illustrations are not photographs of nothing in particular such as we find in so many books of mining but almost all are drawings made for the text. Most of them are small but all of them are of value.

We have taken one of these to illustrate a French method of timbering in a mine now no longer in the possession of the French people—Courrières. What the French call "bois de taille" we would term a "prop." "Rallange" should be translated "collar." We have nothing corresponding to "allange" in America, but "steel forepole" would best serve as a description. The "queues" are crossbars timbering from collar to collar and the "esclimbes" are shorter crossbars set on the "queues." On these the roof rests immediately. The "allanges" or steel bars rest on the "rallanges" or collars and are pushed forward to the face of the coal, their forward ends being pressed against the roof at the face by a chock of



THE STEEL FOREPOLING METHODS OF FRENCH MINES

wood bearing down lever-wise at the other end. The collars are kept within 3 ft. of the face and as the steel bars or allanges are only 20 in. apart there is little risk of death from falling roof.

The book deals with the opening out of a mine, the size of shaft pillars, the support of underground engine houses and stables, the protection of roadways and the actual workings in the coal. The room-and-pillar system has two chapters and longwall two more. The last chapter discusses the relative value of various methods of support at the face.

The treatise contains much regarding English, French, Belgian and German methods. It overlooks American systems almost entirely. The one illustration given of room-and-pillar working in the United States is almost unknown here and would be most uneconomical if adopted. It would not be fair to judge the book on its value as a reflection of our methods. Hardly a single volume written abroad and treating of America would successfully meet the searching light of such criticism.

Coal and Coke News

Harrisburg, Penn.

Much information was obtained from the Pennsylvania welfare and efficiency conference held in the capitol building during the past week. In a short time the legislature will be in session and a flood of bills will be offered looking to every sort of regulation of employment and the welfare of the employed. Many of these measures will be helplessly utopian, some will be so radical as to fall of their own weight, and some will be much more reasonable. This is the situation which confronts every legislature. Much has been accomplished in the last 20 years, most of it beneficial and some of it open to criticism in that it has failed to accomplish the good expected.

State Commissioner Jackson made an address which contains much food for reflection. An investigation made by him involving thousands of employees in various capacities in all parts of the state resulted in the surprising fact that one-fourth of these had changed their employment within a year. Some of this is due to the depression of late and much must be set down to adverse circumstances, but in any event it is not a good showing. Workmen who are constantly changing employment cannot be expected to have the high efficiency of those who work steadily at the same task for years. Operators cannot expect to get the best results with a shifting body of employees.

It was the opinion of many of the delegates that the legislature should establish a bureau of employment with offices in the chief cities, so as to bring employer and employee together. The system has worked fairly successfully abroad and might do some good here, but Commissioner Jackson stated that too much cannot be expected from such a system, because the man out of work in this city, for instance, might find it impossible to take a job in the Pittsburgh district or the anthracite region. But at least the plan is worth trying. If we have a revival of industry, as some believe confidently we shall, the problem of the unemployed will settle itself. If not, much scientific work will be necessary to adjust conditions.

Governor Tener, in addressing the conference, expressed regret that during his administration no workman's compensation and employers' liability act had been passed. The governor, in his first message, declared in favor of such an act, and the fact that the Senate of 1913 defeated such a bill, his friends always contended, has been the one sore spot of his administration with the governor.

PENNSYLVANIA

Anthracite

Hazleton—The discovery of a 6-ft. extension of the Lykens Valley vein at the Truscow No. 16 coal mine of the Lehigh & Wilkes-Barre Coal Co. forebodes the continuation of operations at this plant for 25 years or more. The coal bed in question was discovered at a point where geological experts declared that there could be no coal. It will be developed at once.

Wilkes-Barre—Four men were seriously burned recently in a premature explosion in the Stanton Colliery of the Lehigh & Wilkes-Barre Coal Co. A first-aid crew went to their assistance, and it was necessary to dig some of the men from under a fall of coal and rock.

Nanticoke—The biggest production record for one month in the history of anthracite mining is said to have been attained in the month of October by the Truesdale colliery of the Delaware, Lackawanna & Western R.R. Co., when over 118,726 tons of coal were shipped from the big electrically operated breaker. This record considerably outdistances the figures of the Woodward and Pettebone collieries combined, the latter two producing a total of 115,395 tons for the same period of time.

Bituminous

Indiana—L. F. Sutter and A. P. Sutter recently bought the coal tract of the Plotzer heirs on Yellow Creek, containing 204 acres, the price being \$125 per acre. This tract contains two workable coal beds, while 70 acres are in good timber. The purchasers will open mines and market coal.

Roscoe—Claiming that a stage of water too low to permit shipments of coal down the Ohio, and that the European war

have had a damaging effect upon the coal industry, members of the local miners union No. 854, District No. 5, have sent out a general appeal for financial aid. In preference to accepting charity, however, the miners say that they will gladly work at any occupation that offers, and have applied to the Government for jobs on roads and public institutions.

Somerset—Mine Inspector F. W. Cunningham has instituted a suit in the criminal courts that is decidedly unique. He charges an assistant mine foreman of the Consolidation Coal Co. at Jenner No. 2 with neglect of duty for failing to have props set at the working face of the coal to protect the roof. It is alleged that failure to have the props in place resulted in the death of a foreign miner some weeks ago. The subforeman claims that he directed this man to set the props, as the roof appeared to be unsafe. He then proceeded to perform other duties, and when he returned in about an hour the foreigner was buried under a pile of coal, having failed to carry out his instructions.

Connellsville—The coke production of the Connellsville region remains about 200,000 tons weekly. There have been, however, in the recent past, a slight increase in the number of shipments and a decided interest is manifested in 1915 contracts.

Pittsburgh—The coal business of Pittsburgh and vicinity has undergone a slight betterment in the recent past, more inquiries being received, with slightly greater sales. It is believed, however, that the most hopeful feature of the business is the fact that there is practically no reserve stock. It is believed that with the slightest encouragement the coal companies will increase their production, thereby giving many of the idle miners employment.

Evans Station—The mines of the Evans Coal & Coke Co. at this place recently resumed operation after being closed or on half time for a considerable time past.

Trotter—Supt. B. B. Boyd, of the Trotter plant of the H. C. Frick Coke Co., has established a court of his own. Under orders that have just been issued, any employee who brings a prosecution before a justice of the peace or alderman without first consulting the superintendent is to be discharged. The superintendent hears the quarrels that arise and decides whether they are of sufficient importance to warrant going to law. Mr. Boyd says that hundreds of dollars a year are collected from Trotter foreigners because they are so easily led into bringing actions against their fellow countrymen.

WEST VIRGINIA

Fayetteville—The Minden mines of the New River & Pocahontas Co. are now using power for operation purchased from the Virginian Power Co. These are the first mines in this section to employ the Virginian company's power.

Elkhorn—The U. S. Bureau of Mines rescue car No. 8 is now engaged in the work of training the miners here in the use of the oxygen breathing apparatus and first aid to the injured. Great enthusiasm is being shown among both miners and operators and 25 men have already completed the full course of training.

Clarksburg—A coal deal of considerable magnitude was recently made public by the filing in the County Clerk's office of a deed from J. V. Thompson, of Uniontown, Penn., to Harry Ainsworth, of Moline, Ill., conveying to the latter a $\frac{1}{2}$ interest in the P. M. Jackson coal land of this county. The consideration involved was not announced. The tract consisted of 4008 acres lying on Jones' Run and Isaac's Creek.

Fairmont—In order that work may be given to its employees during the present temporary shortage of orders, the Consolidated Coal Co. has begun the concentration of men at the mines which are easiest to operate. Until orders are more prevalent and the car supply better, some of the plants of the company will remain idle.

Morgantown—The United Mine Workers of America are trying to organize the Fairmont field, Morgantown, Grafton, Clarksburg, Buckhannon and all intermediate towns being considered in the district. Meetings have already been held in Taylor and Preston Counties. A recent meeting held at Flemington resulted in a light attendance and but little interest was exhibited by those present.

ALABAMA

Birmingham—The U. S. Bureau of Mines has appointed a committee to arrange for first-aid instruction in all of the mining camps of the Birmingham district, and to plan for a big field demonstration to be held in Birmingham soon. Chief Mine Inspector Nesbitt is in charge of preparations.

KENTUCKY

Cannel City—The Bureau of Mines has requested the Kentucky Black Cannel Coal Co. to send samples of cannel coal to the federal laboratories in Pittsburgh for experimental purposes. The results of the experiments will be compiled in book form and will contain analyses not only of the cannel coals, but of many others.

Winchester—The mines of the Consolidation Coal Co. and the Elkhorn Mining Corporation are reported here to be resuming operations and to be giving work to several thousand miners who have been idle for some time. Business has shown decided improvement in the last week or so.

Henderson—Two long trains of tank cars leave here each day to supply Madisonville and the coal-mining operations in that part of the state with water for operating purposes. A year ago Madisonville constructed a municipal reservoir which it was expected would hold enough water for all purposes, but it has never been filled, the drouth of the past summer having kept it dry. This is the third successive year that trains of tank cars have hauled water from the Ohio River to the Madisonville consumers.

OHIO

Bridgeport—Additional reports of destitution among the families of striking coal miners in this district indicate that there will be great distress among them during the winter, as they do not possess any fuel, as a rule, and are without funds to provide themselves with food and clothing.

Columbus—No change has taken place recently in the labor situation in Ohio. Miners and operators in the eastern Ohio district have not yet arranged for the resumption of scale conferences and the entire district is idle. In the Coshocton district the situation is also unchanged. Since the rejection of the conference committee's report by the referendum vote of the miners, no steps have been taken to bring about another conference.

INDIANA

Indianapolis—About 75 retailers attended the meeting of the Indianapolis Retail Coal Men's Credit Association. It was decided that the limit of credit should not be more than 30 days. Figuring on profits, it was agreed that \$1.40 should be added to the mine price and the freight charges before any profit could be shown to the retailer. This amount included loss in transit, breakage into slack by handling, cost of driver, upkeep of horses and equipment, cost of unloading at yards and overhead expense. It was shown that some coal sold at \$4.50 a ton had actually cost the dealer \$4.60.

Brazil—A fire recently destroyed the engine house of the Hamlin & Heck mine near here and was making toward the tipples. The miners were warned to make their escape by way of the narrow airshaft which opened near the burning building. All escaped promptly except six, one of whom was unusually large. This man stuck in the shaft, blocking the escape for the other five. It took desperate efforts to dislodge him, which, however, was finally accomplished. Fred Heck, one of the owners, was severely burned while holding the shaft door open for the escaping miners.

ILLINOIS

Chicago—An idea to reduce the production of surplus coals by returning to the 1½-in. lump screen, as suggested by H. C. Adams, of the Jones & Adams Coal Co., is meeting with the general approval of operators in Indiana and Illinois, and it is likely that a meeting will be held shortly in Chicago to take definite action with respect to this suggestion.

Belleville—One of the most interesting mining propositions in Illinois today is the new National mine, southwest of here, producing between 200 and 300 tons per day. This mine was sunk and is owned entirely by miners. In July, 1911, 17 miners and three outsiders put in \$1000 each and leased 135 acres on a 3½c. royalty. They did their own work, and when the mine was ready to produce hired a mine manager, who has no interest in the mine at all. It is one of the few mines in Illinois that has worked continuously six days a week, week in and week out. The coal is sold through a St. Louis jobber on a percentage basis, bringing the market price.

Pocahontas—The miners at the Pocahontas mine are out on a strike that threatens to last through the winter. For

repeatedly breaking the rules of the mine, a miner was discharged. He happened to be the president of the miners' local, and failure on the part of the operator to reinstate him brought the men out. Arrangements have been made to keep the mine closed indefinitely, rather than make the reinstatement.

Grayson—A fire at the mine near here of the Big Creek Colliery Co. severely damaged the operation. It is expected that it will be a month or more before the mine will resume work.

Herrin—Of the three mines taken over last spring by the Taylor Coal Co. from the Southern Illinois Coal & Coke Co., namely, Possum Ridge, Oak Ridge and Walnut Ridge, only one is now worked. The Oak Ridge mine has been abandoned; the Walnut Ridge mine has not worked since last summer, with no prospects of working for several months to come, and the Possum Ridge mine is getting out a tonnage of about 800 or 900 tons per day. Lack of a sufficient market, and the low price of coal, are the only reasons given.

Marion—An unusually large tonnage of Illinois coal has recently moved to Ohio River points, coming from the mines adjacent to this place, and going to Brookport and Golconda, where it is loaded onto barges for points on the Ohio River. Low water has prevented coal coming down from the Pittsburgh field.

Taylorville—Two large suits for damages were recently filed in the Circuit Court, one against the Stonington Coal Co. for \$5000 by Bert Duisy, injured in the mine on March 28 last, and the other for \$10,000 damages filed by Chester Davidson against the same company for injuries received in May.

Springfield—Francis Peabody, of Chicago, the closing of whose coal mines at Witt, Montgomery County, has resulted in acute suffering to 600 miners and their families, has taken steps toward relieving the situation and it is probable that some of the mines will work upon short time for a limited period.

Lovington—About 150 miners employed at the Lovington Coal Co. shaft recently walked out. The trouble, it is alleged, occurred over the employment of a nonunion driver.

MISSOURI

Chilhowie—The coal mines at Chilhowie were recently purchased for \$200,000 by the Chilhowie Coal & Coke Co. These mines have been closed for a couple of years, but will resume operations immediately.

ARKANSAS

Heber Springs—The first real coal mine ever opened in Cleburne County is now being developed one mile west of Heber Springs. This operation is owned by Mortimer Frauenthal and the product is said to be a fine grade of soft coal equal to that shipped in from Alabama or western Arkansas. The coal measure now being worked is about 3 ft. thick, and it is believed that another and thicker measure lies below this.

Prairie Creek—Under the protection of Government troops operations at the Bache-Denman mining interests were resumed Nov. 20 in the Hartford Valley by nonunion labor. It is the intention to gradually extend operations until several of the mines will be running.

Fort Smith—Twenty-six persons, including former officials of the United Mine Workers of America, were indicted by the special United States grand jury investigating the troubles in the Hartford mining district. Among those indicted are Peter R. Stewart, former president of the mine workers for district No. 21, comprising Arkansas, Oklahoma and Texas; Fred W. Holt, former secretary; James S. Slankard, a constable at Hartford, and James McNamara, an ex-councilman of Hartford. They are charged with conspiring against the government to interrupt justice in connection with the troubles of the Bache-Denman Coal Co. at Prairie Creek, and also of sending threatening letters to U. S. Judge Frank A. Youmans and taking prisoners away from a deputy U. S. marshal and participating in riots.

COLORADO

Denver—It is announced that Governor Ammons will shortly request President Wilson to withdraw the federal troops from the Colorado strike zone, and it is expected that the regulars will begin their exodus about Dec. 1. Adjutant-General Chase has issued orders to the Colorado National Guard to hold itself in readiness for field service probably about that date. Although strike leaders have declared that reentry of the state troops into the field would mean a resumption of warfare, the military authorities declare they are capable of handling the situation.

PERSONALS

R. C. Cofer has been appointed general inspector of mines for the Pocahontas Consolidated Coal Co., in place of Robert Wallace, promoted to general superintendent. Both promotions were well earned.

Howard I. Smith has been transferred from Pittsburgh to Urbana, Ill., as district mining engineer for the U. S. Bureau of Mines. This is the position made vacant by the resignation of J. T. Ryan, who has entered private business.

Judge Allie Young, formerly on the state Circuit bench, retained as counsel by the Consolidated Coal & Coke Co. at a salary said to be \$15,000 a year, has opened offices at Whitesburg, Ky. He will give all his time to the company.

Thomas Hammond, of Vandegrift, Penn., for the past four and a half years chief mine foreman for the Pine Run Coal & Coke Co., has resigned his position, effective Dec. 1, and will accept a similar position with the West Penn Mining Co., near Apollo, Penn.

Jacob Yoch, for several years in charge of the North Breese Coal Mining Co.'s property at Breese, Ill., has been transferred to St. Louis as general manager for the International Coal Co. Edward Yoch comes from that position to take charge of the properties at Breese.

J. M. Roan, mine inspector of Ohio, has been called to the Poston mines, near Nelsonville, to settle the question of the percentage of fine coal allowable. The operators have complained that the miners are loading an excessive amount of small sizes which they desire stopped.

S. L. Sherer, secretary of the Big Muddy Coal & Iron Co., is on an extended trip through the Eastern coal fields. Mr. Sherer is also vice-president of the St. Louis Art Museum, and is expected to look up some masterpieces in the Boston and New York galleries for the St. Louis institution.

William McKinley, general superintendent of the Central Coal & Coke Co., has resigned. Mr. McKinley will probably do nothing this winter, but will reënter the business next spring for himself. William Harkes, formerly with the Northern Central Coal Co. at Moberly, Mo., will take his place as general superintendent.

John S. Jones, of Chicago, who recently purchased the holdings of the Sunday Creek Coal Co. from the receiver, expects to assume control of the property about Dec. 1. This property comprises 25 or 30 mines and large acreages in the Hocking and Sunday Creek Valleys in Ohio and along the Kanawha River in West Virginia.

Philip Carson, president of the Cresson Coal & Ice Co., of Philadelphia, Penn., was recently held under \$500 bail for court by Magistrate Macleary on a charge of personally obstructing City Inspectors Sinclair and Mayer from weighing his loaded coal wagons. The prosecution is the first brought by the bureau since its inception in July of last year.

Eugene C. Roberts, Jr., who has for some time been the superintendent of the Fairmount mines in the Allegheny Valley at New Bethlehem, Penn., has been made temporary manager of the Copper Reef copper mines at San Carlos, Ariz., and has gone to assume his new duties. If the work does not suit him, he has the option of returning to his old position.

OBITUARY

Jeremiah B. Jones, 80 years of age, and for many years a coal operator and contractor, died recently at his home, 5240 Schuyler St., Germantown, Penn. Mr. Jones was a member of the Society of Friends and is survived by a wife and one daughter.

Samuel Dunkerly, aged 69 years, for 40 years general superintendent of the G. B. Markle Coal Co., died on Nov. 19, in the State Hospital, following an operation for stomach trouble. He was a veteran of the Civil War and for many years was assistant to the late G. B. Markle.

CONSTRUCTION NEWS

Ebensburg, Penn.—Surveys are being made by the Monroe Coal Co., it is said, for a railroad from the Pennsylvania line at Beulah, some distance west of Ebensburg, to the line of the Cambria & Indiana R.R., 14 miles distant.

Columbus, Ohio—The contract for the railroad bridge across the Ohio River at Sciotoville for the Chesapeake & Ohio Northern R.R. has been awarded to the Dravo Construction Co. of Pittsburgh. Work is to start at once.

Baskett, Ky.—Work was suspended at the Pittsburgh Coal Co.'s mine here last week while repairs were made to the hoisting apparatus. Cables broke and let two cages fall to the bottom of the shaft, a distance of 135 ft. Fortunately, no one was injured.

Claysville, Penn.—Word has been received that Owen Murphy, who was sinking a shaft at Coon Island, expects to resume operations in the near future. He was compelled to close down the work some weeks ago on account of the Baltimore & Ohio R.R. refusing to put in a switch. This matter has, however, been adjusted. Forty miners' houses will also be built during the coming winter.

Chattanooga, Tenn.—Contracts for the concrete and iron work of the new \$1,000,000 coke plant for the Chattanooga Gas & Coal Products Co. have been let by the engineers, and actual construction work upon the plant at Alton Park will begin shortly. Approximately \$200,000 will be expended on the concrete and iron work alone. Installation of the ovens and coal-handling devices will begin about Dec. 15.

Pottsville, Penn.—Work was recently started at the lower end of the St. Clair yards of the Reading Co. to install two large pumps for the purpose of bringing water from the Tumbling Run Dam to Wadesville. A large gang of men was also put at work at the Tumbling Run Dam preparing that end of the pipe line. The purpose of the company is to augment the water now coming from the Silver Creek Dam.

NEW INCORPORATIONS

Novinger, Mo.—The Novinger Coal Co. has been incorporated, with a capital of \$6000, by John Appleby, Frank Beck and Charles W. Kelly.

Franklin, Ky.—The Franklin Coal Co. has been organized with a capital of \$5000. The incorporators are Bailey Franklin, Lena Franklin and W. J. Franklin.

Seattle, Wash.—The Issaquah Coal Sales Co. has been organized with a capital of \$50,000. The incorporators are W. J. Taylor and J. Oakwood. R. D. Ogden is attorney.

Yukon, W. Va.—The Hyper-Pocahontas Coal Co., of Yukon, W. Va., has been organized by D. D. Hatfield, J. W. Strickler and others, of Yukon, with a capital stock of \$25,000.

Oklahoma City, Okla.—The Superior Smokeless Coal Mining Co. has been organized with a capital stock of \$30,000. The incorporators are H. F. Wheeler, Charles T. Gibson and H. M. Sinclair, of Oklahoma City.

Jenkins, Ky.—The Elkhorn & Shelby Creek Coal Co. has been organized and will develop 400 acres of coal land near Penny, Ky. All machinery has been purchased and installed except the mining machines.

Massillon, Ohio—The Spruce River Coal Co. has been incorporated with a capital of \$100,000, to mine coal. The incorporators are I. M. Taggart, F. F. Taggart, L. P. Schunke, E. R. Allright and C. P. McLain.

St. Louis, Mo.—The Williamson County Coal Co., of Illinois, with a capital of \$50,000, has been licensed to do business in Missouri, with an office in St. Louis. This is a subsidiary company of the Lumaghi Coal Co.

Parkersburg, W. Va.—The Mingo Block Coal Corporation, of Parkersburg, W. Va., incorporated at \$2,000,000, has been organized by George S. Sarver, E. A. Ferrin, C. C. Brown and Edwin S. Nely, of Greensburg, Penn., and C. J. Pitgen, of Pittsburgh, to operate coal mines.

Glenville, W. Va.—The Frick Coal & Coke Co., of Glenville, W. Va., has been incorporated with a capital stock of \$1,500,000, by Charles N. Lindley, Charles Edsall and H. J. Von Hemert, of New York, and David J. Carter and Harry W. Sheet, of Clarksburg, W. Va. It will engage in mining.

INDUSTRIAL NEWS

Philadelphia, Penn.—The Lennox Coal Co., with mines at Hastings, Penn., has established a Philadelphia office in the Stephen Girard Building, in charge of A. K. Cosgrove as Eastern manager.

Birmingham, Ala.—According to statistics compiled by Chief Mine Inspector Nesbitt, there have been within the last two years only eight fatalities in the coal mines of Alabama among mine workers under 21 years of age.

Kansas City, Mo.—In the past month three of the leading railroads out of here have changed from coal to oil as a fuel. The low price of oil and the uncertainty of the labor problem in the coal fields of the Southwest were chiefly responsible for the change.

Birmingham, Ala.—The Pierce Coal Co. has just opened a new mine in Jackson County, Ala., which is said to be one of the best equipped in the state. A railroad 20 miles in length has just been completed to connect it with the main line of the Southern Ry.

Columbus, Ohio—The officials of the Hocking Valley Ry. Co. have notified the Ohio Utilities Commission that the \$4,000,000 6 per cent., one-year notes recently authorized by the commission have been sold for 98½. The proceeds will be used to better the equipment of the road.

Toledo, Ohio—The general offices of the Royal Collieries Co. have been removed from Jackson to Toledo, Ohio, and are located in the Ohio Building. Eben Jones, of Jackson, is president, and E. W. Ervin is general and sales manager. The company operates in the Jackson district, and also in Kentucky.

Cincinnati, Ohio—At the regular meeting of the Ohio Valley Improvement Association, held in Cincinnati recently, resolutions were adopted calling on Congress to make adequate provisions for carrying on the work of improving the Ohio River. The object of the association is to secure a 9-ft. stage in the Ohio at all times.

San Francisco, Calif.—The first cargo of coal that has ever been brought to San Francisco from the United Kingdom arrived here from Glasgow recently aboard the British steamship "Crown," of Toledo. The coal was consigned to Balfour, Guthrie & Co., but it is rumored that the cargo of 6499 tons was really meant for a British warship.

Ringling, Okla.—The gradual return of the railroads to the Southwest to the use of fuel oil, together with the contracts made with numerous other industries to use oil for fuel, is increasing the number of independent refineries in the oil districts of Kansas, Oklahoma and Texas. The Southern Pacific, the International & Great Northern, and the Santa Fé have each placed large orders for this fuel.

Scranton, Penn.—A jury recently awarded Samuel M. Reese, of Scranton, damages to the extent of \$1500 against the Peoples Coal Co. It was the first case of its kind ever recorded in this vicinity, that is, damages awarded against a mining company as a result of damage to property. The deed gave the Peoples company the right to mine the underlying coal, but did not waive surface support. Mr. Reese sued for \$3000.

Washington, Penn.—Charged with having refused to pay his employees semi-monthly and being unable to get bail for \$1200, John Greek, of Pittsburgh, president of the Greek Coal Co. and owner of mines near Washington, was placed in the county jail to await a preliminary hearing on Nov. 18. The action against Greek was brought by four of the 65 employees who were thrown out of work when he closed down his workings on Sept. 12, last.

Lynchburg, Va.—The Lynchburg board of trade is preparing to send a representative to the Interstate Commerce Commission to make application for a rate of \$1 per ton on coal from West Virginia mines, the present rate being \$1.50. The rate from West Virginia mines to Bluefield is only 65c. a ton, while to Norfolk it is \$1.40 for export coal, and the Lynchburg board feels that something between these two rates would be a fair charge to that city.

Winchester, Ky.—When the projected tunnel is constructed by the Louisville & Nashville R.R. at Willow Shoals, Lee County, the line to the coal fields along the Winchester-Irvine extension will be shortened five miles. All indications point to an enormous traffic over this line. Construction work is still in progress on the terminals. Preparations are being made at this point to handle daily 1000 cars of outgoing and 500 cars of incoming freight.

St. Louis, Mo.—Under normal conditions, the Missouri Pacific-Iron Mountain system uses 11,000 tons of coal per day on the locomotives of the system. At the present time the daily consumption is 8000 tons per day. The curtailment of 3000 tons per day hits the Illinois field harder, perhaps, than any other field on the system. It is believed that 2000 tons per day of this coal formerly came from Illinois and the other 1000 tons from Kansas and Arkansas fields.

Philadelphia, Penn.—Coal dealers attempting to prevent the weighing of their wagons by inspectors of the Department of Weights and Measures, will in future be prosecuted. According to Chief Virdin, the inspectors have thus far found 80 per cent. of the coal scales defective, most of them to the disadvantage of the purchaser. One dealer refused to permit the inspector to weigh a load of coal leaving his yard, and after a preliminary hearing was held in \$500 bail.

Philadelphia, Penn.—The American Federation of Labor in Annual Convention on Nov. 18, unanimously adopted a resolution calling on President Wilson to insist that the coal operators of Colorado immediately comply with the Federal plan of settlement of the strike existing in that state. In the event that they refuse, the President was urged to operate the mines in the interest of the people under Federal supervision until such time as the civil and political rights of the people are established.

Little Rock, Ark.—The greatest fight that the business houses of Arkansas ever put up is the protest against the proposed increase in the rates on coal. The increase to Little Rock consumers alone would amount to \$50,000 per year and the state would be affected to the extent of over \$100,000. The proposed increase is only on Arkansas coal and would throw the state open to an invasion of Kentucky and Illinois coals. The new rates are an increase on slack of 15c. per ton and 25c. on domestic sizes.

Prince Rupert, B. C.—The first carload of coal has been received at Prince Rupert from west-central Alberta and distributed among consumers for testing purposes. Its use for domestic consumption as well as for steam production is stated to have proved entirely satisfactory. As the charge for haulage is less than the freight between Nanaimo and Prince Rupert, a considerable trade is expected to be opened up between the Alberta mines on the eastern slope of the Rockies and points on the North Pacific coast.

Cincinnati, Ohio—Receivers Harmon and Smith, of the Cincinnati, Hamilton & Dayton Ry. Co., have filed in the United States District Court their report of the receipts and disbursements of the road for the month of September, showing a balance on hand on Sept. 30 of \$546,606.43. The income account for the month shows a total operating revenue of \$939,902, and operating expenses of \$697,334, leaving a net operating revenue of \$242,568. Various deductions leave the net income at \$107,458.38 for the month.

Washington, D. C.—Solicitor-General Davis on Nov. 19 filed in the Supreme Court the government's brief in the suit against the Delaware, Lackawanna & Western R.R. and the Delaware, Lackawanna & Western Coal Co., seeking to destroy an alleged connection between the two concerns. The defendants were charged in the bill with violation of the commodities clause of the Hepburn bill. The suit was designed also to have a contract between the two companies, held to be in contravention of the Sherman anti-trust act.

St. Louis, Mo.—Of vital importance to several of the coal firms with offices in St. Louis is the suit filed on Nov. 14, in the Supreme Court of New York County, New York, by Robert Holmes, a director of the St. Joseph Lead Co., against said company and eight directors thereof, to compel said directors to enter suit against several coal-shipping companies, with offices in St. Louis and mines in Illinois, to recover damages to the extent of approximately \$50,000 for losses sustained by the Lead company, caused by its directors and purchasing agents permitting the coal contracting companies to substitute inferior coal from the Standard field in place of high-grade coal from the Cartersville field.

Toledo, Ohio—At a dinner given at the County Club in Toledo recently, attended by the officers and directors of the Hocking Valley Ry. Co. and the Chesapeake & Ohio R.R. Co., the full extent of the improvements to be made by both companies was discussed. Among the things contemplated is the double-tracking of the Hocking Valley from Columbus to Toledo, the enlargement of the terminal and dock facilities of the road at Toledo, the building of the line of the Chesapeake & Ohio from Portsmouth to Columbus and other steps to increase the efficiency of the roads. These improvements have been under consideration for two years, but have been held up. Now it is proposed to carry them out.

Columbus, Ohio—A bulletin compiled by J. M. Roan, chief deputy and safety commissioner of mines, has been issued by the Ohio Industrial Commission, showing that there were 22 fatal accidents in the mines of the state during the six months ending June 30, 1914. Significance attaches to the fact that the victims were young men, the oldest being only 45. This leads to the comment that the younger miners have faith in their agility and take risks in violation of rules. The need of greater discipline is urged. A second document issued by the same authority is addressed to operators, general managers, superintendents, mine bosses and mine foremen, which calls attention to the increasing dangers incident to cold weather. It points out that cold air entering the mine absorbs the moisture from the workings, leaving a dry dust which is a menace. Mine men are asked to heat the air wherever possible to at least 40 deg. F. and to see that the dust is wet down and kept moist.

Coal Trade Reviews

General Review

Cold snap fails to precipitate the expected activity in anthracite. Some favorable developments in bituminous but still much pressure to move tonnage. High ocean freights restrict foreign shipping.

The recent cold snap has failed to give the expected impetus to the hard-coal business. Considerable activity is noted among dealers, due to a rush of orders from domestic consumers, but the increase was not reflected back to the mines where occasional instances of curtailed production are still noted. Conservative observers are of the opinion that the winter's consumption will fall substantially below normal because of the destitution in most manufacturing districts, which will compel a rigid economy among the poorer classes. But in spite of these discouraging features, the current wholesale business continues on a satisfactory basis, with production and consumption generally well balanced, though the demand is at times intermittent, and salesmen are compelled to push hard for orders.

Bituminous reports continue uniformly optimistic as to the future, even from those districts suffering most acutely from the depression; but so many premature reports of an upturn have occurred in the past, that careful observers will be wary about accepting such in the future. There are undoubtedly favorable developments in the current market, but there is pressure in every direction to move coal, and prices continue weak.

Sacrifice sales are almost a daily occurrence, while the large accumulations at many of the distributing centers seem to indicate a lack of cooperation among the producers. Cheap fuel is the rule, and there is little encouraging in the situation. A number of foreign points are reported as hard pressed for coal, but the heavy demand for steamers in other lines has advanced rates entirely beyond any possibility of taking up this business.

Manufacturing demand in the Pittsburgh district has fallen off a trifle further, and though the movement in the retail trade is somewhat improved, negotiations on new contracts are so rare that there is scarcely any definite circular. Mine operations are at 40% capacity. Domestic trade in Ohio is notably more active, the cold snap having released many orders that were being held back; stocks have begun moving out of the dealer's bins and more orders are coming into the mines. The cold weather has been of such proportions that it was all the coal dealers could have desired, but the effects on the trade have not been so impressive as anticipated. The closing of the Lake trade has thrown considerable coal back on the market, which has not been easy to absorb in every case.

Middle Western operators see definite indications of an improvement as a result of the lower temperatures, and some increased industrial activity. The improvement has not attained to large proportions as yet, but prices are somewhat stiffer, and mine outputs are more closely regulated to market requirements. Indications point to a profitable season.

ATLANTIC SEABOARD

BOSTON

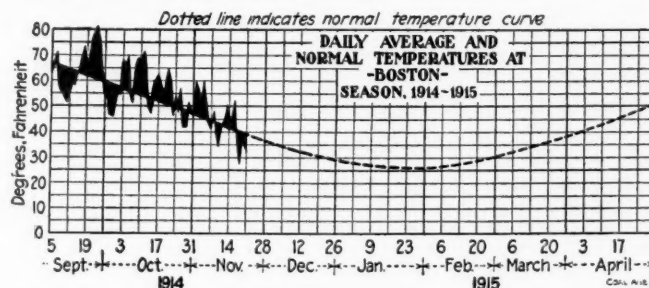
Improved mill business lends some encouragement, although stocks are too large to forecast any spot demand. Uneven production in West Virginia and Tidewater accumulations still large. Export trade off again. Anthracite dull.

Bituminous—There are a few favorable sides to the present market, but only a few. The demand on contracts is a shade better, due partly to the colder weather and partly to an improved mill situation. The latter, however, is hardly general enough to affect the spot market in any way, for stocks throughout New England are too large to permit any buying. Pocahontas and New River continue to show heavy accumulations at Hampton Roads and there is apparently a lack of cooperation among many of the mining interests. Some operators are holding down to a small output consistent with

market needs, but others are not. The result is that sacrifices are made almost daily and the net return to the mines must be disappointing.

Inquiry for export has sagged off again, due probably to the lack of suitable carriers and the consequent inability of American shippers to name delivered prices. Several foreign ports are said to be in a bad way for fuel and it is unfortunate that some way cannot be found to ship the coal.

Prices are unchanged, ranging at the Virginia terminals from \$2.50@2.75, depending on the degree of distress in which the shipper finds himself. Sales are not at all frequent, for most of the trade in New England is tied up on yearly contracts; many of these have had to be modified in view of the general softness of the market, but rumors of such adjustments are naturally hard to confirm.



Georges Creek is beginning now to show a larger volume of shipments than was the prospect a week or two ago. A few steamer cargoes have made up the arrears in this market and now conditions on this grade are restored to about the status that prevailed in October. No concession is heard from the season price of \$2.85@2.95 f.o.b. Baltimore.

Many mines in the Pennsylvania districts are on a two-day per week basis and the outlook is anything but encouraging. There is pressure on all sides to make sales, and prices are still weak. All-rail there is only a scattering demand.

Water Freights are perhaps in better position than a fortnight ago. At least three coastwise colliers that have been in regular service between Hampton Roads and New England have been chartered to load grain for Copenhagen. Rates, however, are still not far from the minimum, 60@65c. being the utmost that would have to be paid for ordinary tonnage.

Anthracite—The trade is almost as dull as in bituminous. There is only a hand-to-mouth demand and the producers are slowing up operations in most parts of the field. All kinds and sizes are in more than adequate supply and salesmen are making strenuous efforts to place coal. The winter has not taken hold in this territory, although a moderate fall of snow last week will probably give some impetus to the retail demand.

Quotations on bituminous at wholesale are about as follows:

	Clearfields	Cambrias Somersets	Georges Creek	Pocahontas New River
Mines*	\$0.85@1.45	\$1.15@1.50	\$1.67@1.77	
Philadelphia*	2.10@2.70	2.35@2.70	2.92@3.02	
New York*	2.40@3.10	2.65@3.05	3.22@3.32	
Baltimore*			2.85@2.95	
Hampton Roads*				\$2.50@2.75
Boston†				3.40@3.73
Providence†				3.25@3.58

* F.o.b.

† On cars.

NEW YORK

Recent embargoes have reduced the excess of bituminous and a slightly better tone is noted. Anthracite steady but rather quiet. All sizes in easy supply.

Bituminous—There are conservative members of the trade who believe they see definite indications of a change for the better, though conceding that the improvement must inevitably be slow. The foreign trade is undoubtedly helping out to quite an appreciable extent among the operators specializing on this business, even though the effect on the market as a whole must be negligible. The recent embargoes at the New York piers have also had a beneficial effect in that they have served to clean up the surplus stocks. In addition to this the new contracts are now beginning to come up for

consideration and a discussion of these is stimulating some interest. A moderate activity still prevails in the bunkering trade which is absorbing considerable coal, and in fact has been the principal mainstay of some companies.

On the other hand, the improvement is progressing so slowly that it obviously cannot assume important proportions before the close of the year, which means that two months' activity is the most that can be expected under the best conditions. It is further noted that there has been a further sharp contraction in operations at the gas coal mines, though this may in a measure be due to an attempt of the labor unions to organize that district. The bituminous market cannot be quotedly changed from the recent level, which we continue to quote as follows: West Virginia steam, \$2.35 @ 2.55; fair grades, Pennsylvania, \$2.55 @ 2.65; good grades of Pennsylvania, \$2.70 @ 2.80; best Miller Pennsylvania, \$3.10 @ 3.15; Georges Creek, \$3.15 @ 3.25.

Anthracite—With shoal water points facing the possibility of an early closing of navigation, there has been a mild rush for anthracite, although it has not at any time attained to abnormal proportions. Curtailment of operations is still necessary in a few isolated instances, and with considerably more than the average tonnage in storage it is not generally thought that the anthracite trade will experience any unusually profitable season, even though the weather be more than ordinarily severe.

A stronger demand is noted for nut coal, but egg is still off, and difficult to move except at low prices. Plenty of stove coal is now available to meet all demands and can be had in full and unrestricted cargoes. Pea coal is moving along in excellent form and is closely held at the full circular as a rule.

In the steam sizes, low-grade rice coal is exceedingly difficult to move. A few odd lots of buckwheat, No. 1, are being offered at \$2.15 at Port Reading, but most of the business is being done at \$2.35 or better. The high-grade steam coals are in active demand, especially barley and rice, though concessions are to be obtained on No. 1 buckwheat where it is necessary to move the coal promptly. The New York market is now quotable on the following basis:

	Upper Ports		Lower Ports	
	Circular	Individual	Circular	Individual
Broken.....	\$5.10	\$4.60@5.10	\$5.05	\$4.55@5.05
Egg.....	5.35	5.10@5.35	5.30	4.85@5.30
Stove.....	5.35	5.25	5.30	5.20@5.30
Chestnut.....	5.60	5.50@5.60	5.55	5.35@5.55
Pea.....	3.55	3.45@3.55	3.50	3.40@3.50
Buckwheat.....	2.80	2.70@2.80	2.50@2.75	2.15@2.75
Rice.....	2.30	2.20@2.30	2.00@2.25	1.45@2.25
Barley.....	1.80	1.70@1.80	1.75	1.25@1.75

PHILADELPHIA

Seasonable weather creates better attitude in anthracite. Domestic in good demand, but steam sizes inclined to be apathetic. Bituminous on about parity with week previous. Demand and prices the same.

Anthracite—There was a much better tone to the market during the past week. The cold weather has created a demand from those who have been putting off purchases from time to time, in the hope that the high temperatures would continue. As a matter of fact, there are indications that considerably less coal will be consumed during the winter than has been the case in the past. No such widespread industrial depression in the mill districts has existed for many years, and it is understood that families are doubling up with the intention of reducing expenses to the lowest possible basis. This means many tons of coal that otherwise would have been consumed, will not find a market, and it is fair to assume that before the winter is over, this will be felt by the anthracite operators and dealers.

Egg size is in a little better demand, due to the change in the weather, and stove and nut are keeping well up in front, with pea a close second. Buckwheat and rice have also felt the impetus, due to increased consumption by hotels and apartment houses, and for the present the outlook is good, although the market still lacks the activity that should prevail at this season of the year.

Prices at Tidewater rule about as follows:

	Circular	Individuals
Broken.....	\$4.75	\$4.50
Egg.....	5.00	4.80 @ 4.90
Stove.....	5.00	5.10
Chestnut.....	5.25	5.10 @ 5.15

Bituminous—The bituminous market has not shown any improvement. Quotations are unchanged, and the demand in no way increased. Some operators, however, are inclined to think that two weeks of good weather will create a better call, but this is not the general feeling in the trade, and the wish is probably father to the thought.

BALTIMORE

Anthracite is the strongest feature of the trade. Bituminous conditions adverse but a gradual building up is now looked for. Exports continue to hold up well.

Cold weather, considerably ahead of the schedule as set by last year, has proven a boon to the trade. Anthracite dealers are quite busy delivering coal to belated customers; there are apparently a much larger number than usual this year who have failed to lay in full supplies and a very good early winter business is expected. Most of the coal men are now pushing deliveries as fast as possible.

In bituminous many large mining sections of West Virginia, Pennsylvania and western Maryland are working not more than one-third time; some mines are on a one day per week basis. Cheap coal is offering everywhere. Pennsylvania low grades are quoted at 90c., and then being taken only in small lots. West Virginia gas three-quarter is to be had around 85c., with run-of-mine at 75c. Some western Maryland low-grade fuels were offered at 80c. There is a strong feeling that the trade has now reached its lowest level.

Exports continue to hold up fairly well. From one to two loadings, comprising shipments of from 2000 to 3000 tons, are being made daily. Were it not for the cutting off of the usual big shipments to Tampico and Vera Cruz by reason of unsettled political conditions in Mexico, the export trade would probably be considerably above normal.

HAMPTON ROADS

Colder weather causes some increase in demand for local consumption. Export and coastwise shipments are holding up fair considering existing conditions.

Dumpings over the piers at Tidewater, while not as heavy as anticipated, are at the same time showing up as well as could be expected. The coastwise movement has been principally to New England ports, with some small shipments going South.

Circular prices are still being asked for New River and Pocahontas run-of-mine, and even with somewhat of an accumulation at Tide no cut, so far as can be ascertained, is being made. The retail price on Pocahontas and New River run-of-mine is \$4 per short ton, with lump at \$5.50. Some of the suppliers are introducing a New River and Pocahontas nut coal into this market, which, although a quicker burning fuel, is much cheaper in price than anthracite, it is meeting with much favor and retails for \$5 per ton against \$7.50 for anthracite nut.

Authoritative announcement of destination of vessels is no longer made, but the following have cleared, presumably for the ports noted:

Vessel	Destination	Vessel	Destination
Vulcano	Genoa or Naples	Sava	Trapani, Sicily
Joseph Di Giorgio	Jamaica	Wegadesk	Cristobal, C. Z.
Talisman	Havana	Eibergen	Para, Brazil
Gladstone	Chilian Ports		

OCEAN FREIGHTS

South American rates entirely prohibitive. Some offerings to Italy. General cargo requirements heavy.

There are a few steamers available for coals to the West Coast of Italy, that can be obtained from about \$5.76 to \$6; these boats carry from 3500 to 6000 tons each. Also a few small boats that will entertain Cuban coal, say at \$2 to \$2.10 for Cardenas; \$2.10 to \$2.25 for Santiago; also Bermuda at about \$2.10.

There are a number of orders in the market for steamers to take coal to Brazil and River Plate ports, but owners' ideas are so much in excess of those of the shippers' that it is useless to quote the figures they are asking. The demand for steamers for grain, horses, general cargo, etc., still continues and owing to the great absorption of tonnage for these trades a scarcity of steamers is now very apparent.—W. W. Battie & Co.

Coal charters have been reported by the "Journal of Commerce" as follows:

Vessel	Nationality	From	To	Tons	Rate
William P. Palmer		Baltimore	Mayport	1609	
Spiral	Norwegian	Philadelphia	Sagua	860	
Iona Tunnell		Philadelphia	Mayport	1118	
Theoline		Philadelphia	Jacksonville	850	\$1.00
Wavenock		Philadelphia	Boston	258	
Yallaroi (ship)	Italian	Norfolk	West coast Italy	1303	
Tibagy	Brazilian	Virginia	Rio Janeiro	1552	
Zilia (bark)	Italian	Virginia	West coast Italy	1095	
Henry T. Scott		Baltimore	San Francisco	915	
St. Gothard	British	Baltimore	Mediterranean	1790	
Isle of Iona	British	Philadelphia		2467	
Courtney C. Houck		Norfolk	Tampa and back	1357	
Henry J. Smith		Boca Grande	Baltimore	998	0.70
Governor Powers		Philadelphia	Boston	1578	
		Philadelphia	Bangor		

Note—Steamers are indicated by **bold face** type, all others being schooners.

LAKE MARKETS

PITTSBURGH

No regular asking prices on contract. Prompt market much cut up. Lake shipments ended. Operations reduced to about 40%.

There have been no negotiations for contract coal and it can hardly be said that there are any circular prices. While the majority of operators still regard the circular of a year ago, based on \$1.30 for mine-run, as nominally in force, others, as recently reported, have announced circular prices on a basis of \$1.20. With no transactions in contracts, and not even a similarity in asking prices, circular quotations may be disregarded entirely. For prompt coal the market is much cut up and no very close prices can be given, but the following quotations represent about as much as any seller could hope to secure: Slack, 60@70c.; nut and slack, \$1; nut, \$1.10; mine-run, \$1.15; ¾-in., \$1.25; 1¼-in., \$1.35, per net ton at mine, Pittsburgh district.

Shipments have practically ceased in the Lake trade, manufacturing demand has fallen off a trifle more and the retail demand, while somewhat better with the cold weather is still unsatisfactory, as dealers are carrying very limited stocks. The cessation of Lake shipments has not stiffened the slack market as much as is usually the case, because the demand for slack is particularly light and there remains considerable production on account of coal demand running so largely, in proportion, 1¼-in. for the domestic trade. Mine operations in the district are averaging about 40% of capacity.

BUFFALO

Heavy steel orders may help the bituminous situation. Some coal losing money on demurrage. General feeling more hopeful. Anthracite doing well.

Bituminous—There is some improvement in bituminous here and there, due mostly to the foreign orders for steel manufactures and textiles. People in other trades are agreed that business is improving and some say that it will soon return with a rush and before we are ready for it. There are undoubtedly many European buyers here and elsewhere, looking for manufactured articles that they can no longer find at home, and this is helping to restore confidence. The general feeling is much better than it was a month ago, though some shippers say the coal business will lag along a matter of six months after most other things are booming.

There is some coal still on track, paying demurrage, but it usually belongs to some inexperienced shipper. Prices are not much changed, being on the basis of \$2.80 for Pittsburgh lump, \$2.70 for three-quarter, \$2.55 for mine-run and \$2.15 for slack, with Allegheny Valley sizes about 25c. lower, slack as a rule selling on a par with Pittsburgh.

Anthracite—There is a good movement of all anthracite sizes except egg, and shippers are disposing of it without much difficulty. The urgent demand for stove and chestnut is not in evidence and it may not be at all what it has been in former seasons, as there was more than the usual tonnage of these sizes sold early in the season and the weather has been unusually mild until the present time.

It was supposed that there was an excess of anthracite on the upper Lake docks, but some shippers who have lately visited that district deny this and it appears that the Lake season is going to end as briskly as the fleet and the weather will permit. Shipments are heavy, the amount cleared for the week being 148,000 tons, which is the largest since the middle of August. Practically everything is going to shippers' docks at the heads of the Lakes, which shows that the smaller points have all the coal they require.

TORONTO, CAN.

Situation much improved by the cooler weather but this was partially discounted by the heavy stocking in August and September.

Trade has been considerably improved since the cooler weather began, but much of this has been already discounted by the laying in of large supplies in August and September in anticipation of a possible shortage. The navigation season has practically closed and only a few more consignments by water will be received. The yards are well stocked for the winter's trade. Prices are as follows: Retail, anthracite, egg, stove and nut, \$8; grate, \$7.75; pea, \$6.75; bituminous steam, \$5.25; screenings, \$4.35; domestic lump, \$6; cannel, \$7.50. Wholesale f.o.b. cars, three-quarter lump \$3.78; screenings, \$2.64.

TOLEDO

Domestic trade greatly stimulated by colder weather. Steam business also shows some improvement owing to better factory operations.

Winter has arrived at last and has caused a remarkable revival in the coal trade here. The biting winds sweeping off the Lake are just what is needed to tone up the coal situation here and the effect has been fully as great as was expected. Orders have been coming in about as fast as they can be taken care of and the comparatively light stocks of the retail dealers are being reduced quite rapidly.

There has also been a noticeable improvement in the steam market; a number of idle factories are starting up. The Lake movement is light but still continues despite the rough weather. There is no congestion in the railroad yards and dealers are not anticipating any shortage. Prices remain unchanged.

COLUMBUS

The lower temperatures have stimulated the trade. Buying more active and prices better maintained. Lake trade now over.

Quite a little boost was given the trade in Ohio by the mild cold wave. The effects are noted in the increased orders received from dealers, who have been able to move stocks. Orders which had been held up because of mild weather were permitted to come forward and there was a general strengthening of the market. Stocks are being reduced to a point where a general buying movement will soon be started. In the rural sections there is also a better movement as farmers are now taking time to haul their winter's supply of fuel.

The steam business is still slow and there is no immediate indication of a change for the better. Manufacturing does not improve very rapidly but larger war orders may have an effect soon. Fuel requirements are not large as yet and much of the buying is being done on the open market rather than on contracts. Contract prices are about the same as the previous year. One of the best features is the strength shown in the small sizes, because of the curtailed production of lump. Nut, pea and slack and coarse slack are selling at higher levels.

The Lake trade is now over and on the whole it was as satisfactory as could be expected under the conditions. Because of the suspension early in the season the tonnage was not, of course, as large as in previous years. Some coal will be loaded yet for storage but it will be only a small amount. Congestion on the docks of the upper Lake ports is reported.

In the Hocking Valley the production was about 45% normal. In the Jackson and Crooksville fields it is estimated at 40% and in Massillon about the same. Pomeroy Bend field reports a large production, about 80% of the average.

The retail market is stronger and prices have been advanced slightly. There is still a marked preference for the fancy grades such as Pocahontas and West Virginia splints.

Anthracite is in good demand and prices remain strong on all grades.

Prices in the Ohio field are:

	Hocking Valley	Pomeroy	Kanawha
Rescreened lump.....	\$1.55	\$1.65	
Inch and a quarter.....	1.50	1.55	\$1.40
Three-quarter inch.....	1.35	1.40	1.35
Nut.....	1.15	1.25	1.15
Mine-run.....	1.10	1.15	1.10
Nut, pea and slack.....	0.35	0.45	0.35
Coarse slack.....	0.25	0.35	0.25

CLEVELAND

Fine coal prices continue to advance as the demand increases and the supply becomes smaller. The domestic trade is good. Some new business is being booked.

One large jobbing company has purchased a considerable amount of fine coal for shipment over the next two weeks, at \$1.70, Cleveland. Fairmount operators are quoting slack at 65c. and 70c. at the mines. Ten operators named the lower price to local brokers at the opening of the week and three the higher price. Spot quotations are from 5 to 10c. lower than shipment prices, but when the stocks on track are cleaned up spot prices will probably go higher than shipment prices as there is no more of the cheap coal of a week ago to be had.

With the exception of Bergholz, Hocking, Youghiogheny and Panhandle there is no coal being quoted that can be brought into this market at a profit. Fairmount would cost the jobbers at least \$1.80, while West Virginia No. 8, Cambridge, Goshen and other Ohio coals not quoted are either not to be had except on old contracts or at prices ranging from \$1.75 to \$1.80 on track here.

Considerable new business is being booked by operators and jobbers. The improvement continues in the market for fine coal. The three-quarter market is dead because of the

close of the Lake season on Monday next and there is so little going forward that only a negligible amount of this size is being made.

Many of the mines in Ohio are working only part time, some as low as two days a week, but a few operators with mines in the Bergholz field are working up to 90% of capacity. A number of operations in West Virginia and Pennsylvania are being closed down with the shipment of the last Lake order.

There is a fair demand for domestic coals, such as Bergholz, Hocking and Youghiogheny 1½-in., but it is not large enough to keep the mines supplied with all the fine coal they can sell. It is generally the opinion now that slack will go no lower this winter.

Quotations for shipment are as follows:

	Pocahontas	Youghiogheny	Bergholz	Fairmount	W. Va. No. 8
Lump.....	\$3.60				
Lump, 6 in.....			\$2.45		
Egg.....	3.60				
Egg, 6 in.....			2.10		
Lump, 1½ in.....		\$2.40	2.25		
Lump, 1 in.....		2.30	2.10	\$1.95@2.00	\$1.95@2.00
Mine run.....	2.60	2.25	1.95	1.85@1.90	1.90
Slack.....	2.40	1.70@1.75	1.65@1.70	1.70@1.75	1.70@1.75

CINCINNATI

Colder weather has stimulated both the domestic and steam markets. Indications point to continued improvement.

The long expected cold spell materialized last week in fine style, freezing temperatures being a nightly occurrence. The resulting business was exceedingly good, as compared with that prevailing for a long time past. The steam trade also seemed to benefit by the change, contract deliveries being nearer a normal mark than at any time so far this season. A satisfactory amount of domestic business has been handled during the week by dealers and operators alike, with every indication that this will continue at the usual winter volume for the rest of the season.

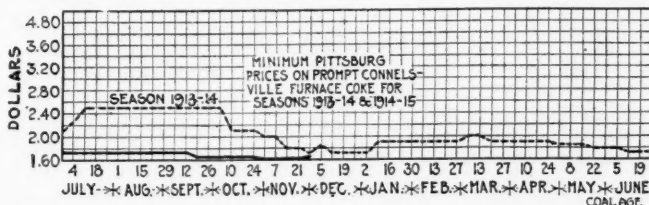
All that can now be asked is a better tone in the iron and steel trades, which would mean a good consumption of steam coal for the winter.

COKE

CONNELLVILLE

No demand for prompt coke and negotiations on contracts proceeding very slowly. Prices soft. Production and shipments approximately stationary.

Negotiations continue on a few furnace-coke contracts for next year, either the first-half or the whole year, but the possible buyers are not pushing matters at all. It is understood that \$1.75 has been quoted for the first-half of the year without arousing any interest. There is scarcely any demand for prompt coke, the few furnaces operating being well supplied on contract. There have been occasional sales of small lots at \$1.60, but this price could possibly be shaded.



Prompt foundry coke is weaker, there being offerings at \$2.15 to consumers, equivalent to \$2 to dealers. The four large operators that made contracts at \$2.35 to dealers and \$2.50 to consumers for the twelvemonth ending June 30 are adhering to the figure for prompt shipment, in order to protect their contracts, in which there is usually an expressed or implied price guarantee. There is no demand for contract foundry coke at this time. Reports that many ovens are being freshly fired in the Connellsville region are purely fabrications, for with pig-iron production still tending to decline, the requirements are lessening and coke ovens are more likely to go out than to go in. The market is quotable as follows: Prompt furnace, \$1.60; contract furnace, \$1.65@1.75; prompt foundry, \$2@2.25; contract foundry (nominal), \$2.35@2.50, per net ton at ovens.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended Nov. 14 at 206,314 tons, a decrease of 5240 tons, and shipments at 210,387 tons, an increase of 6644 tons.

BUFFALO

There is no stir in coke yet. As a rule the members of the trade are hopeful, as the pig iron stored at the furnaces is selling better than it was. Coke prices remain on the basis of \$4.25 for best 72-hr. Connellsville foundry, with stock coke \$3.30.

CHICAGO

The coke market lags along about the same, although it may be said that during the last few days inquiries for prices have been received in larger volume. Quotations are: By-product, \$4.95; Connellsville, \$4.75@4.90; Wise County 72-hr. (select), \$4.75; gas coke, \$4.25; furnace coke, \$4.40@4.65.

THE STEEL INDUSTRY

Pig-iron buying increases. Turn for the better anticipated after the first of the year.

Pig-iron buying has increased; as to that there is no doubt. In finished-steel markets the expectation of better buying just ahead is stronger, for inquiry has grown and in some lines the decline in orders has stopped. Many manufacturing consumers seem to be waiting for the reductions in labor cost which it is widely believed will become effective Jan. 1. Whether prices meantime will discount them is the question close buyers are trying to answer.

Reported Russian and Norwegian inquiries for rails and the figuring of Russian and French commissioners now in New York on various lots of freight cars are still without tangible results.

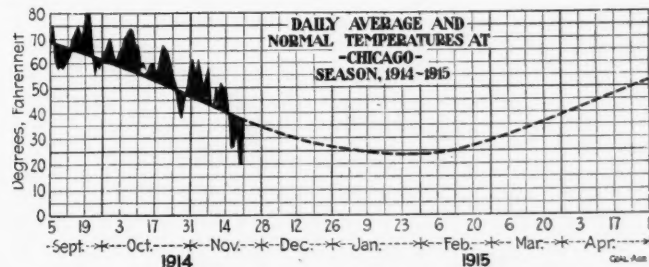
The inquiry of the New York Central for 25,000 tons of rails is likely to result in winter rollings for one mill, at least. Otherwise the rail makers have little to relieve the prospect of a very lean winter. The Pennsylvania Steel Co. has booked a 3500-ton order and the Ensley mill has a week's double-turn operation ahead.—"The Iron Age."

MIDDLE WESTERN

CHICAGO

Arrival of winter weather has a good effect. All Indiana and Illinois coals stronger. Further improvement noted in the screenings situation. Anthracite trade quiet.

Market conditions in Chicago and the Middle West have shown a distinct improvement during the past week owing to the freezing winter weather. A continuance of the low temperatures will be necessary to reduce the large stocks but at this season of the year it is not probable that anything like warm weather will continue for long. Operators are much encouraged over the results of the recent cold snap; while the volume of business has not increased sufficiently to insure full operation of the mines, improvement of any kind is exceedingly welcome to all connected with the trade. It is felt that the period of depression is over and that better conditions will prevail during the balance of this season at least.



There seems to be a more careful regulation of output at the mines than in a number of years past.

Indiana coals have a stronger tendency, especially in screenings. There is a good demand for Sullivan and Clinton County domestic sizes, and Fourth Vein screenings are strong, being held at around 80c. per ton.

The demand for Franklin County domestic sizes has improved particularly screenings which are higher in price.

The anthracite trade continues generally dull, although there has been a perceptible improvement in spots.

Smokeless lump and egg such as Pocahontas and New River, have been in good demand, but mine-run is still weak.

But little improvement is noticed in the demand for splint coals, although colder weather has cleaned up all that accumulating demurrage.

The demand for Hocking and Kentucky coals is still far below the supply, and with little or no improvement due to colder weather.

Youghiogheny gas and smithing coals are quiet. Prevailing quotations are as follows:

	Franklin Co.	Spring-held	Harris-burg	Sullivan	Clinton
Lump.....	\$1.55@1.75	\$1.50@1.60	\$1.50@1.75		\$1.65@1.75
4-in. lump.....				\$1.60@1.75	
Steam lump.....					1.15@1.20
2½-in. lump.....				1.50	
1½-in. lump.....				1.20@1.35	
Mine-run.....			1.10		1.10
Egg.....	1.40@1.75		1.50@1.75		
6x3-in. egg.....		1.50			
Nut.....		1.35	1.30@1.75		
No. 1 nut.....	1.35@1.75				
Screenings.....	0.60@0.75	0.50@0.60	0.55@0.75	0.60@0.80	0.60@0.80

Hocking Valley 1¼-in. lump, \$1.40@1.60; mine-run, \$1.25.

New River and Pocahontas lump and egg, \$2.25; mine-run, \$1.25@1.40.

Somerset Smokeless lump and egg \$2@2.25; mine-run, \$1.25@1.40.

Carterville lump, \$1.60@1.75; 6x3 in. egg, \$1.60@1.75; No. 1 washed egg, \$1.60@1.75; No. 2 washed egg, \$1.50@1.60.

Green County 5-in. lump \$1.60@1.75; 2½-in. lump, \$1.30@1.60; 1¼-in. lump, \$1.35@1.50; screenings, 75@90c.

INDIANAPOLIS

Spurt of buying all around due to cold weather. Steam grades advanced in price but retail quotations are unchanged. Slack selling at better prices.

A fall in the temperature has naturally stimulated the movement of domestic coal and increased the running time at the mines at least one day a week. Some operators have even sold their output for a week or two ahead. The suddenness of the severe weather stirred up the buyers, and prices at the mines were advanced 10 to 15c. a ton for steam coal. Slack demand was good and as high as 75c. was obtained in the open market, as against 50c. the previous week. For domestic the price is \$1.50 to \$1.75, according to size and quality; No. 4 mine-run, \$1.10 to \$1.20; other sizes \$1 to \$1.05. The increased activity caused a slight shortage in gondola cars, chiefly because of their larger use for loading domestic coal. Up to the time of the change of weather the working schedules had not been much increased by the reported general industrial improvement, though something from that is expected later on. The steel mills of the state and some other industries have increased operations and their demand for coal. Retail prices show no change.

There is a "trade-at-home" movement throughout the state at which the coal interests have taken the opportunity to point out that the public institutions of the state should buy Indiana coal.

ST. LOUIS

Situation somewhat improved by the cold weather. Indications point to a steady market for the balance of the season.

A slight improvement in local conditions has been noticeable during the past week. This is due entirely to the cold weather and it has not been long enough nor severe enough to materially affect the market yet. The demand for domestic coal from the South has helped conditions wonderfully, but this call has been confined mostly to egg size. There seems to be a plentiful supply of lump in the Williamson and Franklin County fields but there is apparently no demand this year which is something out of the ordinary. Everything indicates a steady coal market from now until the first of the year.

There has been a slight increase in the price of screenings and steam sizes from higher grade fields, but with the increased output of domestic sizes, this will fall back again. In the Standard field, 2-in. lump is sold as low as \$1 in some instances, while the top of the screenings market is 25c.; 6-in. Standard lump has gone as low as \$1.15, but with a few more days of cold weather, it will be on the upward trend.

There is very little anthracite moving in, and the retailers report no demand. The same applies, in a general way, to smokeless.

The prevailing wholesale prices are:

	Williamson and Franklin Co.	Big Muddy	Mt. Olive	Standard	Sparta
2-in. lump.....			\$1.25	\$1.05@1.15	\$1.20
3-in. lump.....			1.40		
6-in. lump.....	\$1.35@1.60		1.50	1.25@1.30	1.40
Lump and egg.....	1.85@2.15	\$2.25			1.35
No. 1 nut.....	1.25@1.35			0.75@0.80	
Screenings.....	0.50@0.55		0.80@0.85	0.20@0.25	0.20
Mine-run.....	1.05@1.10			0.75@0.80	
No. 1 washed nut.....	1.50@1.60	2.25	1.60		
No. 2 washed nut.....	1.25@1.35		1.35		
No. 3 washed nut.....	1.10@1.15				
No. 4 washed nut.....	1.05@1.10				
No. 5 washed nut.....	0.20@0.25				

PORTLAND

Cooler weather causes increase in demand, but prices show no advance.

Cool weather has set in here and coal dealers are beginning to realize that consumers have been buying largely from hand to mouth. Coal briquettes have made considerable of an inroad on the market for coal, but as these are handled by the dealers, this does not make any particular difference in the amount of business they do. The briquettes are sold at \$9 per ton delivered, while hard coal is quoted at \$9.50 and \$10. Soft coals are selling all the way from \$6 to \$8 per ton but the demand for these is rather limited at present.

There are no reports of any coal coming here from Australia this winter and it is not believed there will be any.

A small cargo of Wellington, B. C., coal was received here this week and is selling at \$10 delivered within the first zone limits of the city. This was the first importation from that section for a long time.

Utah coal has not been coming in as freely as last season, but this is due largely to the fact that consumers have been buying sparingly, because of the mild weather.

KANSAS CITY

Three days of cold weather last week moved the excessive stocks. No increase of prices.

Kansas City has had a touch of real winter and the first strong domestic movement of the season resulted. The stocks accumulated during the previous warm weeks were generally reduced to normal. The cold snap did not last long enough to effect any increase in prices. Another period of warm weather succeeded the temporary winter. There has not been enough cold weather to cause much consumption by the larger users, and contracts seem slow making their appearance.

SAN FRANCISCO

The past week has shown practically no change in the local situation. Weather continues warm and coal for domestic purposes is in light demand. Bituminous coals are going to the dealers at \$7.50 to \$8 per ton, which is a normal figure for this season of the year.

PRODUCTION AND TRANSPORTATION STATISTICS

CHESAPEAKE & OHIO RY.

The following is a comparative statement of the coal and coke traffic from the New River, Kanawha and Kentucky districts for September and the three months of the fiscal years 1913 and 1914, in short tons:

Destination	September				Three Months			
	1914	%	1913	%	1914	%	1913	%
Tidewater.....	384,246	19	261,012	16	985,701	17	819,266	18
East.....	227,959	11	188,570	12	608,893	10	552,610	12
West.....	1,241,932	62	1,010,987	64	3,898,894	66	2,946,659	63
Total.....	1,854,137		1,460,569		5,493,488		4,318,535	
From Connections								
Bituminous.....	149,628	8	120,468	8	414,845	7	318,730	7
Anthracite.....	2,526		1,606		5,270		4,819	
Total.....	2,006,291	100	1,582,643	100	5,913,603	100	4,642,084	100
Coke.....	13,439		29,680		59,653		86,348	

SOUTHWESTERN TONNAGE

The following is a comparative statement of the Southwestern tonnage for May and the three months of the years 1913 and 1914:

State	March		April		May	
	1913	1914	1913	1914	1913	1914
Missouri.....	259,270	263,593	204,255	179,723	186,366	165,395
Kansas.....	492,304	501,841	444,142	378,192	407,124	370,097
Arkansas.....	113,354	165,037	136,153	87,002	130,020	95,749
Oklahoma.....	257,162	296,484	246,155	239,443	252,901	241,180
Totals.....	1,122,090	1,223,955	1,030,705	884,360	976,411	872,421

This statement only covers the tonnage of members of the association, which is estimated to be at least 95% of the entire production.

PENNSYLVANIA RAILROAD

The following is a statement of shipments over the P. R.R. Co.'s lines east of Pittsburgh and Erie for October and ten months of 1913 and 1914, in short tons:

	October		Ten Months	
	1914	1913	1914	1913
Anthracite.....	1,055,344	1,046,703	9,205,279	8,711,723
Bituminous.....	4,233,393	4,887,840	40,346,167	42,662,163
Coke.....	720,070	1,152,950	8,324,007	12,012,363
Total.....	6,008,807	7,087,493	57,875,453	63,386,249

SAULT STE. MARIE CANALS

Coal shipments through the Sault Ste. Marie Canals for September and October were as follows:

	September			October		
	U. S. Canal	Canal	Total	U. S. Canal	Canal	Total
Anthracite	142,063	20,847	162,910	211,810	25,900	237,710
Bituminous	1,427,127	296,475	1,723,602	1,313,170	295,941	1,609,111

IMPORTS AND EXPORTS

The following is a comparative statement of imports and exports of the United States for September, 1913-14, and for the nine months ending September, 1912-13-14, in long tons:

Imports from:	9 Months			September	
	1912	1913	1914	1913	1914
United Kingdom	4,062	4,597	8,410	904	102
Canada	1,050,394	828,013	771,158	81,984	101,646
Japan	20,228	79,075	44,539	8,846	90
Australia and Tasmania	108,925	121,386	164,124	24,735	26,933
Other countries	2,025	2,816	2,053		
Total	1,185,634	1,035,887	990,284	116,469	128,771
Exports:					
Anthracite					
Canada	2,551,589	3,119,522	3,017,158	319,410	389,213
Brazil			6		6
Other countries	50,042	53,480	44,893	6,149	5,869
Total	2,601,631	3,173,002	3,062,057	325,559	395,088
Bituminous					
Canada	7,766,198	10,283,998	7,241,856	1,631,526	1,202,930
Panama	362,277	387,582	214,131	35,732	23,166
Mexico	239,402	397,753	257,380	20,655	42,312
Cuba	851,389	983,392	793,898	115,278	97,787
West Indies	506,624	464,645	479,895	45,149	64,099
Argentina		55,877	193,786	7,251	55,567
Brazil		211,045	201,071	10,957	45,846
Uruguay		5,163	61,443		4,929
Other countries	1,257,403	1,004,508	1,459,320	92,904	320,884
Total	10,983,293	13,793,963	10,902,780	1,959,452	1,857,520
Bunker coal	5,495,719	5,763,584	5,711,948	684,395	673,372

NORFOLK & WESTERN R.R.

Destination of shipments over this road for October and the first ten months of this year and last year were as follows in short tons:

Coal	October		Ten Months	
	1913	1914	1913	1914
Tidewater, foreign	105,523	98,839	1,341,910	1,686,391
Tidewater, coastwise	311,881	302,297	3,204,849	3,220,081
Domestic	1,677,545	1,596,703	15,483,089	17,071,474
Coke				
Tidewater, foreign	3,292		30,491	339
Domestic	111,020	63,625	1,264,781	870,729
Total	2,209,261	2,061,464	21,325,120	22,849,014

FOREIGN MARKETS

GREAT BRITAIN

Market heavy and prices maintained with difficulty. Ocean freights high. Exports show a large falling off.

The London coal trade continues depressed. Both household qualities and manufacturing coals are moving slowly, and the demand is lifeless. Supplies are coming forward in abundance, and the principal metropolitan centers are congested. Prices are maintained with increasing difficulty.

High rates of freightage are the dominating feature. On the Tyne business is very restricted, and only most pressing orders are undertaken. The Lancashire coal market is still very moderate, and those in Yorkshire have also suffered a falling off in business. Matters at Cardiff have taken a change for the worse, and prospects appear exceedingly dull. The position of the Scottish trade remains unchanged.

Further regulations have now been issued relating to trade with the enemy, which require certificates of origin or declarations of destination to be presented of goods imported into or exported from the United Kingdom.

The quantity of coal, coke, and manufactured fuel sent out of the United Kingdom during October is considerably below that of the corresponding month of last year. The total was 4,151,381 tons. During October 1913 and 1912 the totals were respectively 7,059,928 tons, and 7,058,442 tons. During the first 10 months of the present year the exports amounted to 54,523,993 tons, as compared with 63,958,136 tons, and 54,605,209 tons, in the corresponding periods respectively of 1913 and 1912.—"The Colliery Guardian."

Nov. 13.—Tonnage arrivals are unsatisfactory, and so far as Second Admiralty List and Monmouthshire coals are con-

cerned, substantial concessions from quoted prices can be secured by those in a position to take immediate deliveries. For forward shipment sellers generally are inclined to adopt a waiting policy rather than sell at under the quoted figures, being of the opinion that the high rates of freight current will attract tonnage. Quotations are approximately as follows:

Best Welsh steam	\$5.04@5.28	Best Monmouthshires	\$4.02@4.08
Best seconds	4.56@4.68	Seconds	3.84@3.96
Seconds	4.32@4.44	Best Cardiff smalls	1.92@2.04
Best dry coals	4.68@4.92	Cargo smalls	1.20@1.56

The prices for Cardiff coals are f.o.b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are f.o.b. Newport; both net, exclusive of wharfage, and for cash payment.

Freights—Chartering orders are numerous but there is a great scarcity of tonnage and rates practically all round are much improved. Rates are approximately as follows:

Gibraltar	\$2.52	Venice, Ancona	\$4.80	Singapore	\$4.32
Malta	2.76	Alexandria	3.84	Las Palmas	2.40
Marseille	2.60	Port Said	3.84	St. Vincent	2.64
Algiers	2.51	Aden	4.08	Rio Janeiro	3.84
Genoa, Savona	3.48	Colombo	4.20	Monte Video	3.24
Naples	3.48	Sabang	4.08	Buenos Ayres	3.48

FINANCIAL DEPARTMENT

HOCKING VALLEY PRODUCTS CO.

President Daniel E. Reagan reports for the year ended Dec. 31, 1914, as follows:

Results—Notwithstanding general conditions, the damaging effects of the spring flood and suits of certain bond and stockholders to set aside oil lease, there is a decided improvement in the condition and prospects of the company.

Coal—During 1913 the production of coal from the mines and sales thereof show a decrease, and will continue to gradually diminish from year to year, since with very few exceptions the operations consist of working or drawing the pillars left during past operations for the support of roof of mines, and, as the pillars are withdrawn, the mines are abandoned.

Oil and Gas Properties—The maximum production of oil was for March, 1912, when 30 wells produced 52,470 bbl., while 69 wells for December, 1913, produced only 14,408 bbl. Total production for year 1912 was 419,312 bbl.; for 1913 was 192,300 bbl. If the development of the oil properties had not been aggressively pushed, the production and earnings would have shown a much greater decline.

Sinking Funds—Attention is called to the improved condition of surplus account, through increased business of the brick plant and the purchase and retiring of bonds by the sinking fund of 5c. a ton on coal, 25c. a thousand on brick and 15c. a barrel on oil.

INCOME ACCOUNT FOR YEAR ENDING DEC. 31

	1913	1912	1913	1912
Clay products sales (billed)	\$201,213	\$115,395	Selling expense	\$34,569
Coal sales (billed)	287,522	337,152	General expense	43,540
Coal royalties	42,817	40,506	Taxes	15,865
Oil royalties	60,221	85,673	Depreciation	5,000
Rentals	27,322	36,152	Reserve for doubtful accts	5,011
Misc. earnings	9,879	15,014	Reserve for Bessemer-Ferro rental	7,500
Total	\$628,965	\$629,892	Interest on 1st M. bonds	82,763
Cost of clay products sold	\$161,566	\$118,699	Net surplus	\$11,845
Cost of coal sold	261,525	308,327	Sk. fd. depreciation	\$19,541
Expense of other properties	7,281	4,042	Sk. fund, coal	\$18,169
Net income	\$198,593	\$198,824	Sk. fund, clay prod.	4,297
			Sk. fund, oil	28,845
			Litigation expenses	6,109
			Total net deficit	\$46,947

BALANCE SHEET DEC. 31

Assets:	1913	1912	Liabilities:	1913	1912
Property	\$6,083,890	\$6,084,271	Capital stock	\$4,596,350	\$4,596,350
Notes & accts. rec.	106,133	101,707	First M. bonds	1,578,400	1,717,600
Cash	193,460	259,531	Accts. payable	15,516	19,000
Clay prod'ts, coal and oil	102,249	96,038	Accrued bond int.	44,703	48,042
Due from lessees mining equip't.	42,855	35,507	Sinking fund	138,292	92,078
Materials & supp.	6,445	4,394	Miscellaneous	31,105	22,834
Miscellaneous	16,138	32,545	Profit and loss	146,804	118,089
Total	\$6,551,170	\$6,613,993	Total	\$6,551,170	\$6,613,993

Coal Contracts Pending

Contract No. 9—Fort Wayne, Ind.—The Municipal Light, Heat & Power Co., of Fort Wayne, is in the market for 20,000 tons of screenings. Deliveries are to be made in hopper bottom cars during the next year. Address the Municipal Light, Heat & Power Co., Fort Wayne, Indiana.

Contract No. 10—Chicago, Ill.—The Chicago Coated Board Co. is in the market for 300 tons of screenings per day. Deliveries are to extend over a period of one year, and to be made at Chicago, Ill. Address the Chicago Coated Board Co., 420 E. North St., Chicago, Illinois.

Contract No. 11—Portland, Maine—The Portland Gas Light Co. is in the market for 30,000 tons of Penn Gas, Westmoreland, or any good grade, three-quarter screened, gas producing coal for delivery between Mar. 1, 1915 and Mar. 1, 1916. Shipments are to be as required, about in equal monthly proportions, to wharf through one bridge, Portland, Maine, ample water alongside. All communications should be addressed to C. H. Tenney & Co., Managers, 201 Devonshire St., Boston, Massachusetts.

Contract No. 13—New York—The more important bids received on this contract were as follows, delivered:

14,000 TONS NO. 1 BUCKWHEAT—Charles D. Norton & Co., \$3.48; Smith, Lineaweaver & Co., \$3.19; John W. Peale & Co., \$3.53; Meeker & Co., \$3.42.

3700 TONS NO. 1 BUCKWHEAT—Charles D. Norton & Co., \$3.67; A. J. & J. J. McCollum, \$4.24; Smith, Lineaweaver & Co., \$3.69; Bacon Coal Co., \$3.69; John W. Peale & Co., \$3.67; Meeker & Co., \$3.74.

4000 TONS NO. 1 BUCKWHEAT—Charles D. Norton & Co., \$3.43; Smith, Lineaweaver & Co., \$3.48; John W. Peale & Co., \$3.70; Meeker & Co., \$3.67; Gavin Rowe, \$3.54; Joseph Johnson's Sons, \$3.30; John E. Donovan, \$3.55.

15,000 TONS SEMIBITUMINOUS RUN-OF-MINE—Charles D. Norton & Co., \$3.36; Smith, Lineaweaver & Co., \$3.34; John W. Peale & Co., \$3.35.

4000 TONS SEMIBITUMINOUS RUN-OF-MINE—Smith, Lineaweaver & Co., \$3.78; John W. Peale & Co., \$3.78.

3800 TONS NO. 3 BUCKWHEAT—Charles D. Norton & Co., \$1.97; Smith, Lineaweaver & Co., \$2.07; Meeker & Co., \$3.01; Pattison & Bowns, \$1.97.

2400 TONS SEMIBITUMINOUS RUN-OF-MINE—Charles D. Norton & Co., \$3.93; Smith, Lineaweaver & Co., \$3.96; Meeker & Co., \$3.46; Pattison & Bowns, \$4.03.

4800 TONS NO. 3 BUCKWHEAT—Charles D. Norton & Co., \$2.89; Smith, Lineaweaver & Co., \$2.89; Meeker & Co., \$3.46; Pattison & Bowns, \$2.93.

Contract No. 14—Panama, C. Z.—The following are the bids received by the Panama R.R. Co. for furnishing all or any part of the company's requirements, estimated at 500,000 tons of coal:

500,000 TONS—F. R. Long & Co., \$2.70 (contingent on increase in freight rate) for Rockhill Smokeless and Georges Creek, delivery at Philadelphia; C. F. Blake Co., \$2.80 (subject to change in freight rate and supply not to exceed 45,000 tons per month) for New River coal, delivery at Newport News and Sewalls Point; C. P. Burton Coal Co., \$2.50 (not guaranteeing analysis as per specifications), delivery at Baltimore; White Oak Coal Co., \$2.85 for White Oak and New River, delivery at Newport News and Sewalls Point; Pocahontas Fuel Co., \$2.75 for Pocahontas and New River, delivery at Hampton Roads.

350,000 TONS—William C. Atwater & Co., Inc., \$2.70 for Pocahontas semibituminous steam, delivery at Lamberts Point.

250,000 TONS—A. McNeill & Sons, Inc., \$2.60 (under different specifications) for Toms River, delivery at Lamberts Point.

200,000 TONS—A. McNeill & Sons, Inc., \$2.48 for Jamison, delivery at Baltimore, and \$2.55 for delivery at Philadelphia; J. H. Weaver & Co., \$2.68 (subject to change in freight rates, but not to exceed 5c. per ton) for Colver, delivery at Philadelphia; Delaware Carbo Coal & Coke Co., \$2.65 (under different specifications) for Eagle, delivery at Newport News; B. Nicholl & Co., \$2.47 (under different specifications) for Davis Big Vein, delivery at Baltimore; Flat Top Fuel Co., Inc., \$2.85 for Pocahontas, delivery at Norfolk; Castner, Curran & Bullitt, Inc., \$2.83 (at the option of bidder as to the

kind to be supplied) for Pocahontas and New River, delivery at Norfolk.

150,000 TONS—West Virginia Coal Co., \$2.38 for New River, delivery at Newport News and Sewalls Point.

100,000 TONS—New River Coal Co., \$2.85 for New River, delivery at Sewalls Point; Pennsylvania Coal & Coke Corporation, \$2.85 for Webster, delivery at Philadelphia; Crozier Pocahontas Coal Co., \$2.85 for Crozier Pocahontas, delivery at Lamberts Point; Chesapeake & Ohio Coal & Coke Co., \$2.80 for Admiralty New River Smokeless; Maryland Coal & Coke Co., \$2.80 for M. C. & C. New River.

70,000 TONS—New England Coal & Coke Co., \$2.70 (subject to increase in freight rates) for Beacon, delivery at Boston.

50,000 TONS—Chesapeake & Ohio Coal Agency, \$2.85 for New River, delivery at Newport News and Sewalls Point; A. McNeill & Sons, Inc., \$2.58 and \$2.63 for South Fork, delivery at Baltimore; \$2.65 for delivery at Philadelphia, and \$2.73 for Miller, delivery at Baltimore.

Contract No. 19—New York—Sealed bids are requested by the Department of Public Works for furnishing, delivering, storing and trimming coal for use in the various public buildings, courts, etc., in Manhattan, as follows: About 3,000,000 lb. buckwheat No. 1, 26,000,000 lb. buckwheat No. 2, 13,000,000 lb. buckwheat No. 3, 1,300,000 lb. broken coal, 4,000,000 lb. bituminous coal, run-of-mine. The security required on each bid will be \$20,000, and a deposit of 5% of the security must accompany each bid. Bids will be opened at 2 p.m., Dec. 3, Room 2034, Municipal Building, Borough of Manhattan. Time for completion of this contract will not be later than Dec. 31. Blank forms and further information can be obtained on application to the auditor, Room 2141, Municipal Building.

Contract No. 20—New York—Bids will be received by the Board of Trustees, Bellevue Hospital, until 3 p.m., Dec. 4, for furnishing and delivering 300 gross tons buckwheat coal No. 1. The security required will be 30% of the total amount of the bid and a deposit of 1½% shall accompany each bid. The time for completion of this contract shall not be later than Dec. 31. Blank forms and further information can be obtained on application to the auditor, 400 East 29th St., Borough of Manhattan.

Contract No. 21—Cleveland, Ohio—Sealed proposals for furnishing and delivering 2000 tons of Pittsburgh nut coal, 100 tons of the best grade soft lump coal and 50 tons of the best grade Lackawanna egg coal will be received by the County Commissioner until 10 a.m., Dec. 12, each bid to be accompanied by samples of not less than 25 lb. A certified check for \$500 must accompany each bid. Address E. G. Krause, Clerk of the Board of County Commissioners, Cuyahoga County, Cleveland, Ohio.

CONTRACTS LET

Contract No. 12—New York—This contract, which provides for furnishing 2600 tons of anthracite buckwheat and chestnut, was awarded to John S. Conabeer, whose bid was \$3.95 on buckwheat and \$7.44 on nut, the gross consideration being \$10,793.50. For a complete list of the bids made on this contract, see the last issue of "Coal Age." Address C. B. Rhinehart, Secretary, Armory Board, Hall of Records, New York City.

Contract No. 15—New York Harbor—This contract, which provides for furnishing 20,000 tons of steam coal, has been awarded to the J. H. Weaver Co., whose bid, delivered f.o.b. suitable lighters or barges alongside at Navy Yard, Brooklyn, was \$3.25, with a guaranteed heat value of 14,567 B.t.u. Complete list of all bids submitted appeared in last week's issue of "Coal Age." Address Navy Department, Bureau of Supplies and Accounts, Washington, D. C.

Contract No. 16—New York Harbor—It has been recommended that the bid of Hite & Rafetto be accepted on this contract, which provides for furnishing and trimming approximately 17,000 tons of bituminous coal to be used by the United States dredges in New York Harbor. This bid was \$3.43 per ton for Bird Quemahoning coal with a guaranteed heat value of 14,400 B.t.u. Maj. G. J. Dent, Corps of Engineers, Army Building, New York.